

## Fertilizer Tonnage Dips in 1954-55, But Use of Plant Food Nutrients Sets Record

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### Spring Sales of Anhydrous Up 17%, AAI Survey Shows

MEMPHIS—A spot check of anhydrous ammonia sales for the January-May, 1956 period shows a 17.38% increase as compared with the same months in 1955, the Agricultural Ammonia Institute, with headquarters in Memphis, reports.

Forty-seven distributor-members of the AAI in 25 states and one in Canada supplied information for the survey. They reported total sales of 30,411 tons for the five months, as compared with 25,958 tons for the same months in 1955.

"We are surprised at the results of this survey," Jack F. Criswell, executive vice president of the AAI said, "as we have received a number of adverse verbal reports this spring, and many national authorities are predicting lower fertilizer consumption for the 1955-56 fertilizer year."

He pointed out that similar ammonia surveys showed a 34% increase in 1954, and 17% in 1955—both of which proved to be conservative.

In this year's survey, 25 distributors reported increased sales; 21 reported decreases, and two said sales were about the same. Sales prospects for ammonia as sidedressing were reported as excellent by seven distributors, good by 22, fair by 12, and poor by five. Twenty three of the distributors reported stepped-up advertising and promotion.

Approximately one-fifth of the nation's nitrogen fertilizer is now being applied as anhydrous ammonia by the direct application method, AAI said. The 1955-56 tonnage is expected to reach 460,000.

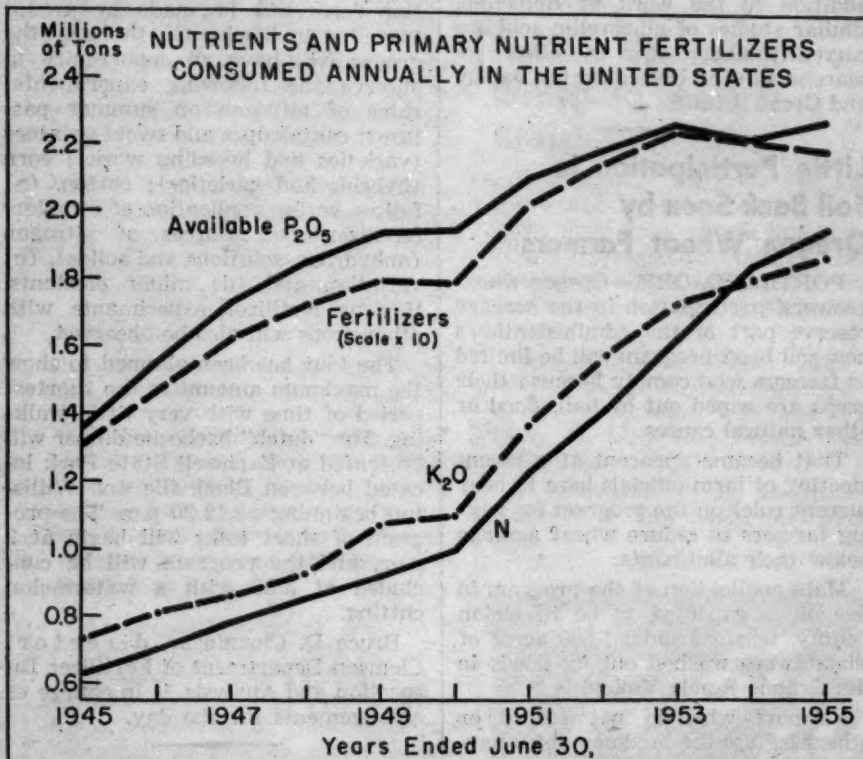
### Industry Growth Shown in Census Of Manufacturers

WASHINGTON—The value added by manufacture by the fertilizer industry in 1954 totaled \$234 million, according to the 1954 census of manufacturers, recently released by the Bureau of the Census. This compares with \$187 million which the industry added by manufacture in 1947, date of the last previous census.

The fertilizer industry had 31,000 employees and a payroll of \$107 million in 1954, the census report shows. Of these, 24,000 were production workers who received wages of \$75 million.

Capital expenditure by the fertilizer industry for new facilities and

(Continued on page 17)



## Industry Sales Opportunities Seen in Soil Bank Acreage Reserve Program in Corn Area

By JOHN CIPPERLY  
Croplife Washington Correspondent

WASHINGTON—While the operating procedures of the acreage reserve program of the soil bank now are being transmitted to farm areas, observers here have pointed out some attractions in the plan for Corn Belt farmers.

The producer in the commercial Corn Belt area who complied with the corn acreage allotment proportionately to the national 43 million acre allotment is in a favorable position. He can put up to the soil bank limit oats or soybeans into the acreage reserve program and obtain 90¢ bu., which is the corn certificate value for average yields on oat or soybean acreage.

The simple farmer kitchen arithmetic of this situation is that oats cost about 30¢ bu. to produce. For every acre of oats taken out of production the farmer can obtain 90¢ corn value certificates yielding about 60 bu. per acre. This can amount to a cash certificate value for oat land put into the corn acreage reserve of about \$54 cash on the barrel head payment from the federal government.

This money in many cases will be available for side-dressing plant food disbursements for the corn crop. The corn price support in the commercial

Corn Belt is all down hill sledding this year. In the commercial Corn Belt even non-compliers with the original corn acreage allotment program can obtain not less than \$1.25 bu. in the federal price support program. Compliers can get price support at \$1.50 bu.

That looks like an unsuspected sales opportunity for dealers who want to get late corn crop summer business in selling nitrogen for side dressing. This is the opinion of solid U.S. Department of Agriculture experts who understand the terms of the soil bank and the problems of the commercial Corn Belt.

The next attractive deal in the commercial Corn Belt concerns farmers who keep corn acreage within the pro-rata 51 million acre corn base allotment of the acreage reserve program of the soil bank. They can also

(Continued on page 17)

WASHINGTON—Consumption of fertilizers in the U.S. and territories decreased 0.22% during the fiscal year ending June 30, 1955, but the total use of plant food nutrients set a new record in the same period, according to the annual fertilizer consumption report just issued by the U.S. Department of Agriculture. Total tonnages of fertilizers amounted to 22,723,705 tons, which was 49,794 tons less than the amount consumed during the 1953-54 period.

Although the total tonnage was down somewhat from the previous year's report, the continued trend toward higher analysis products resulted in a greater consumption of primary nutrients. The total use of these nutrients set a new record for the sixteenth consecutive year and amounted to 6,119,841 tons. Thus their consumption was 224,283 tons (3.80%) over that in the preceding year.

The consumption of nitrogen increased 113,120 tons (6.12%) to 1,960,536 tons, that of available P<sub>2</sub>O<sub>5</sub> 49,814 tons (2.23%) to 2,284,362 tons, and that of K<sub>2</sub>O 61,349 (3.38%) to 1,874,943 tons. The consumption of total P<sub>2</sub>O<sub>5</sub> decreased 41,870 tons (1.59%) to 2,597,549 tons, owing principally to the decrease in use of phosphate rock which is estimated to have contained an average of 32% of total P<sub>2</sub>O<sub>5</sub>, but only 8% of available P<sub>2</sub>O<sub>5</sub>.

The average primary nutrient content of fertilizers bearing primary nutrients was 27.89% in 1954-55 as compared with 26.61% for the preceding year.

The data presented herein were compiled from manufacturers' reports of shipments to agents, dealers, distributors and consumers in the Territories (except Alaska), the District of Columbia and the states (except California, Florida, Massachusetts, (Continued on page 18)

## Texas Co. to Build Ammonia Plant

NEW YORK—Construction of its new 180-ton-a-day ammonia plant is to begin this fall, the Texas Company has announced. The plant will be located at Lockport, Ill., and production is expected to begin late in 1957, according to L. C. Kemp, Jr., general manager of the Texas Company's petrochemical department.

Located at the site of the company's Lockport refinery, the new plant will have facilities for converting a substantial part of the ammonia to nitrogen solutions.

Ammonia will be manufactured from hydrogen obtained from the refinery's catalytic reforming operations, it was stated.

### Inside You'll Find

Insect, Plant Disease Notes	4
Over the Counter	9
What's New	10
Bug of the Week	12
What's Been Happening	13
Oscar and Pat	14
Farm Service Data	15
Editorials	22
Meeting Memos	23
Index of Advertisers	23



## New Growth Regulator Triples Growth of Some Plants in Preliminary USDA Tests

WASHINGTON—A rare and little-known substance that has caused remarkable acceleration of growth in a number of plants offers unusual possibilities as a growth-regulating chemical, the U.S. Department of Agriculture reports.

In preliminary greenhouse experiments, gibberellic acid (one form of the chemical) has doubled or tripled the heights of various kinds of plants. Only one application of the chemical, in very minute amounts, was made in each case.

In these tests at USDA's Agricultural Research Center, Beltsville, Md., gibberellic acid was applied in a lanolin paste mixture externally to the stems of young plants. Within three to four weeks following treatment, ornamentals such as geranium, poinsettia, sunflower, rose, salvia, dwarf dahlia, petunia, and aster had grown one-half to three times taller than comparable untreated plants.

Heights of crop plants such as snapbean, soybean, peanut, pepper, eggplant, corn and barley were in many cases doubled or tripled by similar application of the chemical. During the early stages of growth, both the weight of fresh soybean and snapbean plants and the amount of solid matter in them were increased by 30 to 40% with gibberellic acid.

In limited tests with several vegetables, including tomatoes, snapbeans and peppers, applying the chemical directly to the fruit did not affect fruit growth.

New growth of young forest trees such as willow oak, tulip poplar and maple was greatly increased by treatment with gibberellic acid, USDA said. However, similar applications to two species of pine and white spruce caused only slight increase in growth of new shoots.

Under greenhouse conditions, gibberellic acid retarded flowering of some ornamental and crop plants, while in others it advanced flowering by one to several weeks.

Only minute amounts of the chemical are needed to produce these effects, according to USDA. As little as one-millionth of an ounce of gibberellic acid in an ounce of water caused plants to grow taller in some of the Beltsville tests. Although all initial applications of the acid were in a lanolin paste mixture, researchers have now switched to using a foliar spray, which is easier to apply.

Even though gibberellic acid itself is not new, having been known for some years, its present experimental use as a growth regulator on a wide variety of horticultural, agronomic and forest-tree species is a relatively new development.

The acid was first obtained from a fungus of the genus *Gibberella* that has long been a major disease of rice in Japan, causing excessive elongation of the rice plants and reduced yield. When early work on prevention of this disease was carried on in Japan, researchers noticed the characteristic elongation of plants grown in media containing the fungus, and they later isolated from the fungus chemicals responsible for this increased growth not only of rice but of other kinds of plants. Studies on its characteristics by scientists at Beltsville were initiated as part of a continuing research program on plant-growth-regulating compounds.

Physiologists P. C. Marth, W. V. Audia and J. W. Mitchell of USDA's Agricultural Research Service are conducting the work on gibberellic acid at Beltsville. Their initial success in increasing plant growth has led them to extend their research to learn whether gibberellic acid can be used in any of the following ways: to stimulate elongation of plants, giving

them an advantage over competing growths; to increase the dry weight of certain crops at harvest time (especially forage crops); and to increase the growth of plants that grow slowly but are in great demand, such as pulpwood.

The USDA scientists point out, however, that research on gibberellic acid is still in a preliminary stage, and no immediate practical use for the chemical has yet been worked out.

A major difficulty is the serious shortage of gibberellic acid. Methods for production of the chemical in large amounts have not been developed, and available supplies are in urgent demand because of its sudden prominence as a research material. In addition to the work at Beltsville, similar studies of gibberellic acid are currently under way by other researchers in the United States, Japan, and Great Britain.

### Little Participation in Soil Bank Seen by Oregon Wheat Farmers

PORTLAND, ORE.—Oregon wheat growers' participation in the acreage reserve part of the administration's new soil bank program will be limited to farmers who comply because their crops are wiped out by hail, flood or other natural causes.

That became apparent at a recent meeting of farm officials here to hear current rules on the program for paying farmers to reduce wheat acreage below their allotments.

Main application of the program in Oregon is expected to be in Union County, where around 1,500 acres of wheat were washed out by floods in the Grande Ronde Valley.

Farmers who do not reseed or otherwise use the land can get a payment of \$6 an acre on up to 50% of the farm's acreage allotment or 50 acres, whichever is larger. This \$6 payment can be collected on any wheat destroyed by natural cause since it was seeded and before July 20.

### Kentucky Sales

LEXINGTON, KY.—April fertilizer sales in Kentucky totaled 103,564 tons, compared with 114,970 tons in April a year earlier, according to the Kentucky Department of Feed and Fertilizer. Sales for the first four months of 1956 totaled 273,935, compared with 287,853 in a corresponding period in 1955.



**PLANNING GROUP**—Shown above at a recent meeting are members of the Southwestern Fertilizer Conference Planning Committee. From left to right are Mrs. W. S. Tyler; W. S. Tyler, Longhorn Construction Co.; Mrs. Jack Lindsey; Dr. J. F. Fudge, Texas state chemist; Jimmy Powledge, National Hotel Co.; Mrs. Stanley Hackett; Stanley Hackett, Dixie Fertilizer Co.; Mrs. J. D. Dawson; J. D. Dawson, Fidelity Chemical Corp.; Mrs. Harold Trammell; Harold Trammell, Farmers Fertilizer Co., and Mrs. J. F. Fudge. Not shown but on the committee is Jack Lindsey, Potash Division, International Minerals & Chemical Corp. The Southwestern conference and grade hearing will be held July 18-20 at the Buccaneer Hotel in Galveston. (See page 2 of the June 18 issue of *Croplife* for a story on the program.)

### Fertilizer Tour Set For South Carolina Experiment Station

CLEMSON, S.C.—Fertilizer manufacturers, dealers and salesmen operating in South Carolina, and others who are interested in the fertilizer industry in this state have been invited to attend a tour of the Edisto Experiment Station, Blackville, S.C. July 12. The invitation was extended by Dr. R. F. Poole, president, Clemson College.

In addition to the tour, the program for the day calls for a "dutch" barbecue dinner at Barnwell State Park to be followed by short talks by visitors and college authorities and a watermelon cutting.

The activities for the day will get underway at 8 a.m. when registration begins in front of the office building at the station. The tour of the station farm will be made by groups traveling in trucks. On the tour the groups will have an opportunity to observe the following experiments: rates of nitrogen on summer pastures; cantaloupes and sweet potatoes (varieties and breeding work); corn (hybrids and varieties); cotton, (a) fall vs. spring application of complete fertilizer, (b) sources of nitrogen (anhydrous, solutions and solids), (c) varieties, and (d) minor elements. Various fertilizer experiments with other crops will also be observed.

The tour has been planned to show the maximum amount in the shortest period of time with very little walking. The "dutch" barbecue dinner will be served at Barnwell State Park located between Blackville and Williston beginning at 12:30 p.m. The program of short talks will begin at 2 p.m., and the program will be concluded at 3:30 with a watermelon cutting.

Bruce D. Cloaninger, director, Clemson Department of Fertilizer Inspection and Analysis, is in charge of arrangements for the day.

### Cooperative Farm Chemicals Building Large Warehouse

LAWRENCE, KANSAS—A large warehouse under construction at the Cooperative Farm Chemicals Assn. fertilizer plant a mile east of here is scheduled to be completed by Sept. 1.

The warehouse will be 160 feet wide and 800 feet long, containing about 3 acres of floor space, and will be of aluminized steel. It will be used to house the plant's finished product, ammonium nitrate fertilizer in pellet form, in bags. P. R. Zurbuchen is general manager of the Cooperative Farm Chemicals Assn. fertilizer plant.



William R. Morgan

### W. R. Morgan Named Vice President at Hydrocarbon Firm

NEW YORK—William R. Morgan has been elected vice president in charge of sales for Hydrocarbon Products Co., Inc., New York, the directors of the firm have announced. Mr. Morgan was formerly midwest sales manager with the potash division of International Minerals & Chemical Corp., Chicago.

Mr. Morgan's career with IMC began in 1946, upon his separation from the U.S. Army with the rank of major. His first position with IMC was at the Carlsbad, N.M. mine. Subsequently, he became a sales representative and in 1948 was transferred to Chicago to assume the position he now leaves.

A degree in geology was awarded Mr. Morgan by Michigan State University in 1942.

### Escambia Bay Names A. E. New To Technical Post

PENSACOLA, FLA.—The appointment of A. E. New as director of the technical department in the manufacturing division of Escambia Bay Chemical Corp. was recently announced by D. J. Stark, vice president and production manager.

Mr. New has been director of process development at the Texas City plant of Carbide and Carbon Chemicals Co. for a number of years.

In his position with Escambia Bay Chemical Co., Mr. New will serve the company's plant near Pensacola. He will be responsible for process design and engineering projects starting with pilot plant data through full plant scale operation. He will also provide technical service to the operation of the new Florida plants and correlate the activities of the manufacturing division with the research division and commercial chemical development.

Mr. New holds a B.S. degree in chemical engineering from the University of North Carolina and a M.S. degree in chemical engineering from the University of Michigan. He resides in Pensacola with his wife and three children.

### RECEIVES DEGREE

STATE COLLEGE, N.M.—J. Gordon Watts, head of the department of botany and entomology at New Mexico A&M College, received his Ph.D. degree in entomology from Ohio State University, Columbus, in June. His dissertation for his Ph.D. degree at Ohio State "Crop Sensitivity to Accumulations in the Soil of Insecticides Employed for Cotton Insect Control," will be published in a South Carolina Agricultural Experiment Station bulletin.



## Northern Chemical Searsport Project Progress Reported

SEARSPORT, MAINE—A second progress report on the expansion of Northern Chemical Industries, Inc., at Searsport has been issued by J. E. Totman, Baltimore, president of the firm. An earlier report was released late in January (see page 1 of the Feb. 6 issue of Croplife).

In the new release, dated June 20, Mr. Totman reports that several new units have been placed into operation, on a completed or trial run basis, since late January.

One of these is a new contact sulphuric acid plant, which, together with the original plant, gives a rated capacity of 170 tons a day with actual production having reached 245 tons. This is a Leonard Construction, Monsanto type contact unit.

The increased production since Feb. 1 has been utilized in the manufacture of superphosphate, sulphate of ammonia, liquid alum and complete fertilizer, and in the sales of sulphuric acid as such, Mr. Totman reports.

"Nitric acid, ammonium nitrate and nitrogen fertilizer solution facilities have been turned over," the report states. "We are now in the process of making final adjustments. Several hundred tons of acid and solutions have been produced from purchased anhydrous ammonia."

"The anhydrous ammonia line is nearing completion with start-up of the first segment scheduled for late June. Following closely behind this will come the Texaco process unit, followed by shift conversion and nitrogen purification units. Assuming that these units start off without undue difficulties, we should be in maximum production within 60 days."

"We have received . . . part of our fleet of tank cars. Some of these are all-steel, others aluminum and still others rubber-lined steel tank cars. All are attractively painted in the state of Maine red, white and blue colors. The liquid alum cars have been in use for the past several weeks."

"Since our first report, we have purchased from the Bangor & Aroostook Railroad and subsidiary, the Bangor Investment Co., all of the remaining land in the area which we are using, some 93 acres. This gives us a total of 220 acres, now owned by the company with about half a mile frontage along the B&A Railroad's Searsport-Northern Maine Junction Branch. Railroad sidings, along with railroad scales, have been installed to provide ample storage for tank and box cars."

## Systemic Pesticides May Help in Disease Control

BERKELEY, CAL.—The development of systemic insecticides offers new hope for protecting plants from virus diseases, it was reported last week to the International Conference on Crop Protection by Dr. Robert L. Metcalf, chairman of the entomology department on the University of California, Riverside.

The scientist pointed out that chemical control of insect carriers of plant diseases is more difficult than that of insect pests which cause direct plant damage because of the relatively few insects, and short periods of feeding, required to produce destructive infections.

Systemics applied as sprays or injected into the sap systems of trees, spread throughout the plant and move into new growth produced after application. Despite this residual action, there is no greater possibility of contaminating food products with proper systemic applications than with conventional insecticides, Dr. Metcalf declared.

## Group Asks for Study Of Radioactive Deposits In Agricultural Areas

WASHINGTON — U.S. scientists should start long-term study of the increase in radioactive materials being deposited in the nation's agricultural areas and the effect this may have on human food consumption.

This recommendation highlighted a report on the effects of atomic radiation on agriculture and food supplies disclosed here recently by a special committee of the National Academy of Science headed by Prof. A. Geoffrey Norman of the department of botany at the University of Michigan.

Part of a broad, nationwide study by the National Academy on the biological effects of atomic radiation, the report said:

"The testing of atomic and nuclear weapons is placing in soil, water and air the world over radioisotopes not previously present, though at extremely low levels. Even if weapon testing were discontinued, some increase in radiation levels in agricultural areas could be expected as mankind develops nuclear power and other peaceful applications of atomic energy."

"The natural content of foods now consumed by animals and man is not the same as in the pre-atomic age. Though extremely small, the difference is measurable, and inescapable."

"While slowly rising background radiation is not likely to impair food production, high radiation levels—from whatever cause—could locally disrupt or halt agricultural operations and the production of food."

"At present, it is not possible to say at what level a food otherwise wholesome becomes unwholesome or harmful because of an unnatural burden of radioactivity. There is a great deficiency of data on the long-term biological effects that may follow the consumption of such foods."

Turning to applications of peaceful atomic research in agriculture, the committee said that "radioisotopic tracer studies have already been enormously fruitful." It suggested, however, that training in the use of these tracers for research might be improved if colleges and universities established advanced training programs in this field at the graduate level.

Radiation can also be used to induce plant mutations designed to improve crops, the committee noted, "but progress in this area is slow because of the large numbers of irradiated plants that have to be examined and the recombinations necessary before . . . acceptable varieties can be found."

"No drastic changes in agricultural production are imminent," the committee concluded, "but progress in this area will probably be built in little steps, the sum total of which . . . may take us a long way."

## Dow Forms Wood and Construction Section

MIDLAND, MICH.—Formation of a wood and construction section as part of its technical service and development has been announced by the Dow Chemical Co. George E. Olson, formerly with Dowicide sales, has been named to head the new section, and associated with him will be H. M. Tobey and H. A. Huber.

In announcing the new group, Donald Williams, vice president and director of sales, said that the section will be responsible for the development of applications for both new and established chemicals in the wood and construction fields. It will also handle sales service work on pentachlorophenol and other chemical products now employed in wood treatment.

## Trademarks

The following trademarks were published in the Official Gazette of the U.S. Patent Office in compliance with Section 12 (a) of the Trademark Act of 1946. Notice of opposition under Section 13 may be filed within 30 days of publication in the Gazette. (See Rules 20.1 to 20.5.) As provided by Section 31 of the act, a fee of \$25 must accompany each notice of opposition.

The trademarks described here appeared in the Official Gazette dated June 19, 1956.

**Plainsman Nitro Phos**, in hand-lettered style, with drawing of plainsman and covered wagon, for liquid fertilizer. Filed May 25, 1955, by Plainsman Fertilizers, Inc., Plainview, Texas. First use Feb. 1, 1955.

**Stop Drop**, on drawing representing fruit, within rectangular box, for horticultural hormone spray for fruit trees for reducing the pre-harvest drop of fruit. Filed Jan. 10, 1956, by Sherwin-Williams Co., Cleveland, Ohio. First use on or about June 13, 1940.

## Pacific Northwest Group to Meet in British Columbia

PORTLAND, ORE. — The annual convention of the Pacific Northwest Plant Food Assn. will be held Nov. 7-9 at the Harrison Hot Springs (British Columbia) Hotel, according to an announcement by Leon S. Jackson, secretary.

Robert Allard, Wilbur Ellis Co., Seattle, has been named general convention chairman, and Lee Fryer, Chas. H. Lilly Co., Seattle, is program chairman.

Reservations should be made directly with the hotel, Mr. Jackson said.

## Employees Avert Tragedy at Frontier Chemical Co. Plant

WICHITA — An explosion which could have destroyed the \$10,000,000 plant of the Frontier Chemical Co., Wichita, was averted by the quick thinking and acting of three of the company employees. Plant manager, W. H. Collins, called their actions "heroic."

Edwin McCrillis, superintendent; B. Masterson, a foreman and Dean Briles, a machine operator, discovered a blaze, June 14, in a department in which large quantities of benzene and chlorine are stored. In the tanks were mixtures of lime and water to which other chemicals were being added.

Knowing the highly explosive chemicals might ignite at any moment, the three men battled the blaze with dry powder extinguishers and turned off the valves feeding the chemicals into the flaming tanks. They had the fire under control when the fire department arrived.

Combustion in the mixture in the tanks was apparently caused by sun rays streaming through a window. There was no damage to the plant. Damage to tanks and chemicals was estimated at \$1,500.


## TO JOIN CROP GROUP

URBANA, ILL.—J. C. Hackleman, University of Illinois professor of crops extension, who will retire from the University staff as of Sept. 1, 1956, will join the staff of the Illinois Crop Improvement Assn. as its public relation officer as of that date.

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# INSECT, PLANT DISEASE NOTES

## Rains in Alabama Increase Weevil Threat

MONTGOMERY, ALA.—Boll weevil infestations are more serious at this stage of cotton growth than in any year since 1950, according to W. A. Ruffin, Alabama Polytechnic Institute extension entomologist.

From Montgomery south, he reports that field inspections revealed 40 to 50% of the squares on the rapidly growing plants have been punctured. He said that the severity of infestation made immediate application of pesticides absolutely necessary if the pest is to be kept under control, and concern was expressed over the fact that few farmers have yet started dusting.

Recent rains have caused cotton to make very fast growth in the southern part of Alabama, and under such conditions weevil infestation usually rises sharply. The extension service recommends control measures when 25% of the squares in a field have been punctured, and no area inspected showed less than this number, Mr. Ruffin reported.

No serious damage from bollworms was reported.

## Corn and Potato Pests Feature Maryland Report

COLLEGE PARK, MD.—Potato leafhoppers are appearing on second growth alfalfa in central Maryland (June 22) averaging from 1 to 2 adults per sweep. The insects will probably increase from now on. It is time to spray infested fields to prevent damage. Meadow spittlebug adults are numerous in alfalfa fields. Do not confuse this insect with the potato leafhopper.

European corn borer is starting out in rather heavy numbers, being more abundant than usual at this time of year, both on the Eastern Shore and in central Maryland. Field corn infestations in Dorchester county, 8 fields examined, range from 2 to 100%, average 36%. Sweet corn, which is smaller than the field corn, had a lower infestation. Very few eggs could be found, indicating most of the first brood eggs have hatched.

Eggs and borers have been found in somewhat smaller numbers in Frederick county. An insecticide dealer in Dorchester county has obtained a Gandy seeder and is treating corn fields in the area with granulated DDT, following recommendations that came from the Midwest. An examination of treated corn showed 65% kill of borers, but there is a chance of the kill increasing as the borers move down the stalk.

Corn earworms were also found on Dorchester county corn, causing severe injury to a few stalks. The earworm is a much larger insect and makes larger feeding holes than the corn borer.

Mexican bean beetles are heavier than normal in most sections. Bean leaf beetles have done considerable damage to unprotected beans in most sections. Light numbers of potato leafhoppers were found on beans and potatoes in Carroll and Somerset counties. Potato aphids on tomatoes in Somerset and Carroll counties are from light to moderate. This past week some small hornworms were found on tomatoes in Dorchester County.

Imported cabbage worm butterflies are abundant in central Maryland and on the Eastern Shore. These will lay eggs on cabbage, broccoli, etc. Control the worms on cole crops when they are small.

First brood hornworms have started to feed on tobacco in southern Maryland. Flea beetles were quite heavy on newly set plants in Anne

Arundel county. For flea beetle, hornworm, and budworm control in the field, insecticides should be applied while the worms are small to prevent damage.

Aphids are abnormally abundant in Norway maple, tulip, poplar, and oaks. The insects produce quantities of honeydew and cause leaves to drop from Norway maple. Spray infested trees with good power equipment. Newly hatched bagworms are at work on junipers.

At Hancock second brood adults and eggs of the red-banded leaf roller were found in one orchard in the Indian Springs area. A few stings by codling moth observed to date at Hancock. Heavy in crab apples in Baltimore County. Unspotted tentiform leaf miner second brood larvae are present in orchards in Hancock and Indian Spring areas. Eggs of the second brood as well as pupae were also found. Orchard mites still present in some orchards in large numbers, other orchards are relatively free.—Theo. L. Bissell and Wallace C. Harding, Jr.

## Weevils a Threat to Tennessee Cotton

KNOXVILLE, TENN.—Cotton is growing rapidly and is putting on squares in the older fields. Thrip damage has hindered growth in many fields and has caused cotton to get a later start. (June 25)

Boll weevils are becoming more active in the southern tier of counties. In the fields that are not far enough along to have squares that are subject to weevil damage, they are continuing to feed in the terminal bud. Fields that have older squares are receiving considerable damage to the few squares that are over a week old. There were not enough squares in the fields this week to make square counts but in some fields almost all were punctured.

Infestations are not general all over these counties but vary from one field to the next. The average number of weevils per acre for this week was 250 for the fields found to be infested.

## Early Breakfast and Sunrise Schedule for Pilots on Grasshopper Control Operation

COLDWATER, KAN.—How does a grasshopper control program look through the eyes of a pilot who is assigned the job of applying insecticides on a broad area of infested land? This question is answered very adroitly by Harold Shankland, associate extension editor at Kansas State College, who writes:

"You get to see the sunrise when you're fighting 100,000 acres of grasshoppers.

"Getting up at 3:40 a.m., however, is easily justified when you realize that nearly a hundred ranchers have put up \$40,000 in an effort to save the rangeland on which many of them depend for their livelihood.

"As you walk the block to a restaurant you notice the still-glowing 'no vacancy' sign of the motel and the lights of the Blue Moon cafe whose operators are opening two hours early during the 'air lift.'

"Even though it's only 4 o'clock you find all but one of the six booths occupied and Mr. and Mrs. Bob Metzker and their daughter, Ruby, busy serving the crew of 'hopper fighters. A. E. Frazier, the head man, is almost through eating.

"You arrive at the strip from which the planes are to take off just before 5 a.m., in time to see the first Vultee BT13, converted to

Only light traces of weevils have been found north of the southern counties. Some early season damage can be expected in the heavier infested fields if we continue to receive as much rainfall as we have had.

Most cotton is beyond thrip damage with the exception of light injury to the terminal growth. Small cotton is still receiving damage and is slow getting started. Some fields are still in the two leaf stage due to severe thrip injury.

Flea beetles are causing most of their injury in combination with thrip, but are causing very light damage in other fields where thrip is not a problem. Boll worm egg masses were found in several fields this week. This is the first found for this season. Only a few worms have been found.

Plant bugs are becoming more abundant in the fields but are very light at this time. Flea hoppers are still found in limited numbers. There has been no increase over that of last week.

Unidentified larvae found to be tunneling in cotton stalks last week are believed to be the common stalk borer (*Papaipema nebris*). This borer is not a common pest of cotton but is found in the margins of cotton fields feeding on a variety of host plants. Its favorite host plant is the giant rag weed.—R. P. Mullett.

## Grasshoppers, Other Pests Active in Iowa

AMES, IOWA—The grasshopper infestation is serious. (June 23) Surveys show these populations:

South ½—1 to 35 1st instar to adult hoppers per square yard in roadsides and fencerows, 10 to 50 (mostly 1st-3rd instar) per square yard in hay fields. Hoppers are concentrated in areas where vegetation is green.

Central ½—grasshoppers mostly 1st-2nd instar *M. differentialis*, few 3rd instar to adult hoppers. Roadsides

aerial spraying, take off with its load of 250 gallons.

"Overhead is a U.S. Department of Agriculture plane from Beltsville, Md., in which Norman Myers is checking to see that the spray planes are properly covering their strips and with the right amount of the aldrin 'hopper killing material.

"Minutes and 250 sprayed acres later, the plane bounces to a stop for re-filling. A tanker-type 5,000-gallon truck has the liquid supply.

"Even though the three small 250-gallon capacity planes are covering 5,000 to 7,000 acres a day, you're thinking like the USDA personnel that it will be good when the 'big' plane that's promised gets in.

"When it's rolling you cover 1,000 acres each trip—four times that of the smaller planes.

"Dell Gates, extension entomologist at Kansas State College, says the job must be finished before the young 'hoppers get much larger and begin to lay their eggs. If the area can be covered by July 1, he says, most of the next generation of grasshoppers will be killed.

"You're through for the day around 10 to 10:30 a.m. Your tip to quit is given by increasing wind velocity and rising temperatures. You don't get a good kill where there is much wind and a temperature over 85 degrees, entomologists say."

range 1-5, cut alfalfa fields range 10-50, pastures 5-20 per square yard.

Many fields not showing any green second growth because of grasshopper feeding. Hay fields where the crop has recently been removed, oats, beans and corn should be checked by sweeping with an insect net. If 10 or more grasshoppers per sweep are caught, severe damage is possible.

Treat fencerows, roadsides, vacant areas, as well as recently cut alfalfa and clover fields. Spray edges of corn and bean fields where hopper damage is starting. In pastures, it is wise to run a fence, treat half the area and keep livestock off this area for the time specified on the label.

The cotton cutworm or climbing cutworm is present in corn and alfalfa in central Iowa. Gray and black blister beetles are abundant. In several cases, chopped alfalfa containing many crushed beetles was refused by cattle. Hay cut and cured in the field won't have beetles in it. If blister beetles are crushed on the skin, the juices will cause a painful blister.

First brood corn borer moth flight is drawing to a close in the south ½ and should have been over in north Iowa by June 30. Infestation appears heaviest in eastern Iowa. West of a line running through Ames the infestation is light.

A few reports have been received of chinch bugs in corn. Some fields have been treated. As small grain ripens, low chinch bug populations may migrate to adjacent corn. Even light populations can destroy the first rows of corn. Watch any small grain field that is ripening unevenly. Check grass and ground for small red, white-barred or black, white-spotted, wingless bugs.

Both 6-spotted and potato leafhoppers are present in corn, averaging 8-10 per plant. We don't know how much damage these do by their sucking of sap from the corn. Thrips are also feeding in the whorl of field corn plants. Damage is hard to assess.

Garden insects are also prominent in the state. Two-spotted mite is rapidly increasing in orchards, corn earworm eggs are hatching on silks of sweet corn, and squash bug, squash vine borer, cucumber beetles, cabbage worms, potato and bean leaf hoppers, European corn borer, egg plant flea-beetles are still active.—Harold Gunderson.

## Corn Borer Emergence Complete in Illinois

URBANA, ILL.—Corn borer moth emergence is practically complete in all areas of Illinois except the north-east. Egg-laying is rapidly approaching or past the peak in the north-central and northern sections; in the central and western sections, it is declining rapidly. However, many moths are still flying and egg-laying will continue for another week or more in central Illinois and for about two weeks or more in northern Illinois.

It has become increasingly evident this past week (June 22) that first-generation borer damage will be severe in many areas. Corn borer survival will now increase steadily in the more mature corn. Not only should tiny borers be present this week, but we will probably see half-grown borers in the whorls also.

The death of borer pupae mentioned last week was beneficial in some areas. In other areas this did not occur. During the past week locally severe thunderstorms, accompanied by strong winds, have also killed moths in some areas. A high percentage of corn acreage in some areas of central and north-central Illinois is now attractive for egg laying, and this will help to dilute the egg population. However, these conditions are all local, and no specific areas can be



heavily defined. From general field observations, it is apparent that in the area south of Route 6 the population is heaviest in the east and decreases westward.

Considering the number of eggs yet to be laid and the susceptibility of many cornfields, it still appears that the borer will be generally serious. All of the more mature fields in the area north of Highway 36 should be watched carefully.

South and South-Central Illinois (South of Highway 36). Occasional early fields in this area may be profitably treated. Treatment should begin immediately.

Central Illinois (Between Highways 36 and 9). Ideal time to begin applying insecticides was June 25 and would continue for about a week to 10 days. The most mature fields should be treated first.

North-Central Illinois (Between Highways 9 and 6). The most mature fields in this area may be treated the middle to latter part of the week of June 25 and probably into the week of July 4.

Northern Illinois (North of Route 6). It now appears that the ideal time to apply insecticides in this area will start about July 1 and continue to about July 10.

Tassel ratio is determined by measuring height of plant with leaves extended and tassel height from ground to tip of developing tassel. To get the ratio, divide tassel height by plant height and multiply by 100.

Cutworms continue to damage corn in northern Illinois. Corn in some areas of eastern and northeastern Illinois, particularly the dry areas, has noticeable infestations of chinch bugs. The bugs that hatch on corn ordinarily do not survive unless they have previously fed on a small grain. More bugs hatch from eggs to replace the dead ones, but they also die. This continual hatching makes it appear as though there is no decrease in numbers. However, "where a grass or small grain was plowed down before corn, the young bugs feed upon it, and they will then survive."

In western, north-central and northwestern Illinois, grasshoppers are hatching and are concentrated in fencerows, ditch banks and grass waterways.

Bagworms are very numerous in many areas, particularly in the south half of the state, and potato beetles are severe on tomatoes in northeastern Illinois.—H. B. Petty.

### Boll Weevil Situation Spotty in N. Carolina

RALEIGH, N.C.—The showers and additional moisture on the 18th and 19th greatly improved the crop prospect. Reports indicate that all sections received some moisture. The stand is good, generally speaking, except in a few sections. Growth is rapidly catching up in spite of the fact the crop is 1 to 2 weeks late due to the early season cool weather.

Boll weevil emergence during the week (ending June 22) continued rather spotty with some counties again showing large numbers in some fields. We definitely, so far, have more weevils than last season with the numbers quite like 1953. Should it prove out that the pests are delayed as the crop was due to the cool weather, we may have a more general type of infestation by mid-July when the 1st generation weevils and the late emerging ones overlap. The fact that few squares were present this week in the Piedmont and the more northern counties should make for a slight first brood infestation in these areas, but emergence may pick up in the next few days. Checking fields at 2 to 3 day intervals will pay and permit one to get materials on if a build up should take place.

It is difficult to summarize or make a general statement since the situation seems to vary widely from

field to field. In fields where the weevil infestation is heavy and the plants are fruiting, frequent treatments are very urgent. Delays will prove costly. On the other hand, in fields where few weevils have been found and fruiting is taking place, one can delay treatments until a square count can be made. A high infestation count when few squares are present need not be alarming but treatments should be made immediately and continued.

A few mites were reported in Hertford, Edgecombe, Duplin, Cleveland, Hoke and Lincoln counties this week. In most cases only small areas in the fields were infested.

### Cotton Thrips Heavy in Arizona, Report Says

PHOENIX, ARIZ.—Cotton continues to make excellent growth and some stub cotton is almost at the point of having quite a number of open bolls. Thrips have been heavier

this year than in a number of years. It is interesting to note that thrips appeared several weeks later than normally and have done considerable damage. Many cotton plants 10 to 12 inches high have set no squares where thrips have not been controlled. In Pinal and Maricopa counties spider mites are causing some injury.

Assistant county agent Robertson reports that in the Casa Grande area Lygus showed a count of 5, while in the Eloy, East and West Coolidge areas, the counts ran from 0 to 5. Mr. Robertson further comments flea hoppers are increasing in the Eloy area. Several were also noticed in the East Coolidge area.

Thrips were not prevalent in either of the East or West Coolidge areas but were prevalent in the Eloy area. An occasional bollworm has been found in the Casa Grande area. This is also true of stink bugs. A great number of predators, such as callops, lady bugs, lace wings and hooded

flower beetles are present also.

Mites are causing injury to individual fields in Chandler, Gilbert, Mesa, Queen Creek and Tolleson areas. In some fields the entire acreage has been dusted while in others only infested areas were treated. Growers in Chandler and Gilbert areas report high populations of the black flea hopper, some reaching as high as 32 per 100 sweeps. Lygus counts in the Tolleson and Buckeye areas run as high as 28 per 100 sweeps. Mr. Carter and the writer found a few leaf perforators and an occasional bollworm egg in several parts of the county.—J. N. Roney.

### Alfalfa and Cotton Bugs Found in New Mexico

LOVINGTON, N.M.—Insects of various kinds are working on crops in Lea and surrounding counties. The alfalfa aphid builds up infestations regularly, though most farmers are

(Continued on page 21)

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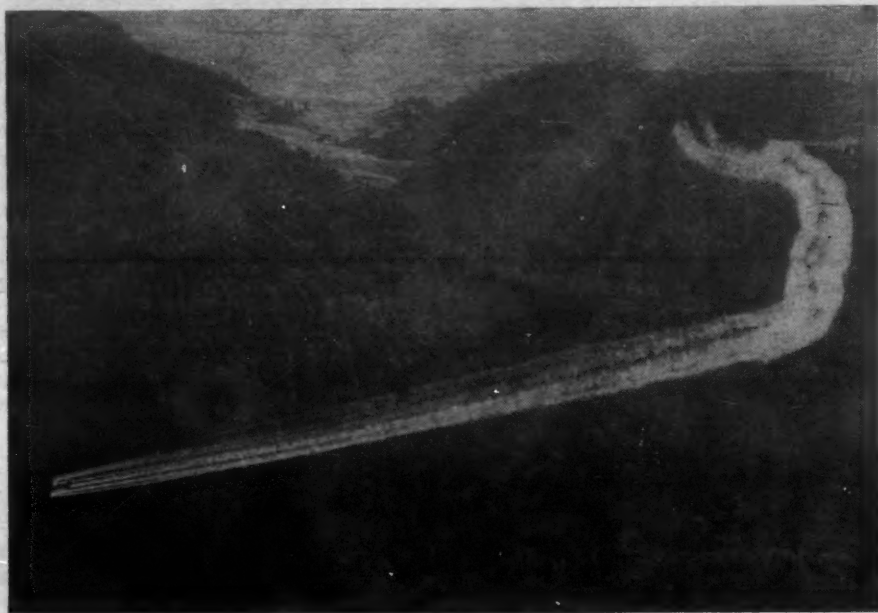
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**SPRAYING PROJECT**—The aerial spraying operation for control of spruce budworm in Montana is illustrated above. Note the spray caught in drafts of the rugged terrain. The project is being conducted by United-Heckathorn, Richmond, Cal., which also is spraying in Florida for control of the Mediterranean fruit fly.

## United-Heckathorn in Midst of Big Spray Projects in Florida, Montana

RICHMOND, CAL.—Two big air spray projects are being conducted this summer by United-Heckathorn in opposite corners of the nation.

In an emergency operation, the firm has sent four planes with men and equipment to formulate the insecticide and spray 180,000 acres in Florida for the Mediterranean fruit fly which is threatening the citrus industry. (See page 1 of the June 11 Croplife.) The entire area will be sprayed three times at intervals of 10 days making a total of 540,000 acres to be covered in 30 days. The amount of this award is for approximately \$500,000.

M. D. Riddle, chief chemist for United-Heckathorn with E. S. Heckathorn president, will be in the area to supervise the formulation of the insecticide, malathion in a water bait as specified by the Agricultural Research Service of the U.S. Department of Agriculture.

The entire operation is being done by Skyspray, an air spray company owned by United-Heckathorn. Working at top speed to transfer men and equipment to the area, Skyspray started in June with a B-17, B-18 and two C-82's. Tank capacities range from 1,000 gal. to 3,000 gal. each and will spray 300 acres a minute. All planes have radio ground contact during all operations assuring maximum safety precautions at all times.

In the meantime, E. G. Trimpey, operations manager, is supervising a crew setting up a plant in Bozeman, Mont., to start spraying 1,000,000 acres for spruce budworm. The amount of this contract is for approximately \$750,000. It is believed to be the largest project in the history of aerial spraying. Operations started about June 20 with several planes including a DC-2, a DC-3 and tri-motored Ford.

A dosage of 1 lb. of DDT in one gallon of diesel oil per acre was prepared and trucked to the landing fields near 5 strategically located towns. It is expected that the entire

## John W. Hall Named to Succeed G. E. Pettitt in Potash Company Office

WASHINGTON, D.C.—John W. Hall has been appointed vice president in charge of sales, of the Potash Company of America. This action was taken by the company's board of directors to fill the vacancy caused by the recent death of George E. Pettitt.

Announcement of Mr. Hall's appointment was made by G. F. Coope, president of CPA.

operation will be completed in 30 to 40 days.

United-Heckathorn will also use Skyspray in New Mexico, spraying for spruce budworm and grasshoppers. The firm will also spray 195,000 acres in Colorado for grasshopper control.

The United Chemical Division of United-Heckathorn distributes more than 250 agricultural chemical items throughout the west. Its export division supplies pesticides for export to practically all countries in the world. Last month, United-Heckathorn supplied 1,000,000 lb. of 75% DDT wettable through the General Services Administration for the malaria control program in India. This is the 8th year United-Heckathorn has been doing this type of work.

## Monsanto Transfers Harold F. Shattuck To New York Office

ST. LOUIS—Harold F. Shattuck of St. Louis, a sales executive with Monsanto Chemical Co.'s Organic Chemicals Division, has been transferred to the company's New York sales office to take up his new duties as eastern technical manager for the division.

John L. Hammer, Jr., director of marketing for the division, said that Mr. Shattuck's new responsibilities include counselling and assisting eastern sales representatives on matters relating to the chemistry of Monsanto's products and the broadening of Monsanto's contacts among major eastern companies.

Mr. Shattuck joined Monsanto in 1925 as a plant supervisor. He served in this and in technical service capacities until 1941 when he was put in charge of Monsanto's Washington, D.C., office to handle the company's wartime liaison with the government.

Mr. Shattuck became assistant manager of sales development with the Organic Chemicals Division in 1945 and has served in sales executive capacities since that date. His recent duties have included the training of sales and other divisional personnel in the background and chemistry of the division's product lines.

## Parasite Study

DENVER—Colorado, Michigan and California have been selected as states where a fight will be made against the parasite nematode that attacks sugar beets, Western Beet Sugar Producers, Inc. announced here recently. The project, which will include a study and extensive field tests, will be headed by Dr. Fields E. Caveness.

# Weeds Reduce Soybean Yields Significantly, Research Shows

WASHINGTON—Weeds can be an expensive pest, even in so-called clean cultivated row crops, according to results of cooperative research conducted since 1951 by Iowa State College and the U.S. Department of Agriculture. This work has demonstrated that in-the-row weed growth can reduce bean yields in soybeans by about 10%.

Extensive field trials at Ames, Iowa, not only established the high cost of natural weed infestations, but measured the damage caused by weeds under a variety of conditions of infestation.

These experiments, conducted by David W. Staniforth, Iowa Agricultural Experiment Station, and Charles R. Weber, employed cooperatively by the station and by USDA's Agricultural Research Service, involved such typical plants as yellow foxtail, a grassy weed; velvet leaf and Pennsylvania smartweed, both broadleaved weeds; and the Hawkeye variety of soybeans. The weeds were planted singly and in combination in the row with soybeans, and then were thinned to stands of 3, 6 and 12 weeds per foot of row. Weeds were removed at a half-dozen specific intervals during the growth of the soybeans.

In general, this elaborate research program demonstrated that soybean yield reductions are proportional to the amount of weed growth, and that the combined above-ground growth of soybeans and weeds is approximately the same as the above-ground growth of weed-free soybeans. The tests showed also that the presence of weeds delayed maturity of beans about one day, decreased the height of soybean plants about 2 inches,

and increased lodging of soybean plants about 2 to 6%.

The scientists found that although weather is an important factor—in dry years weeds had little effect on soybean yields, and in years of ample moisture weeds reduced yields the most late in the season—weeds on the average began to affect soybean yields early in the season and caused progressively greater yield reductions as the crop matured.

In one experiment aimed at demonstrating the different effects of varieties and numbers of weeds on soybean yields, the scientists found that a foxtail infestation averaging 6 plants per foot of row during the entire growing season caused only a 2.6% yield reduction, but that 12 foxtail plants per foot of row caused an 11.1% yield reduction.

The two broadleaved weeds—velvet leaf and Pennsylvania smartweed—caused an average reduction in soybean yields of 8% when grown at a density of 3 plants per foot of row and 9.1% at a density of 6 plants per foot of row. In these tests the two weed species were not grown in combination—in other words, the soybeans had only one weed species in a given treatment.

Because foxtail becomes established early in the season, it tends to reduce soybean yields during the entire growing period; smartweed, however, which is two to three weeks later than foxtail, tends to decrease yields the most late in the season (early September).

## Columbia-Southern Chemical Corp. Elects Three New Directors

PITTSBURGH—Columbia-Southern Chemical Corp. has elected three new directors and increased the number of board members from 11 to 14 according to an announcement by E. T. Asplundh, president. Columbia-Southern, a producer of chlorine, alkalies and derivative chemicals, is a wholly-owned subsidiary of Pittsburgh Plate Glass Co.

The three new directors are C. F. Bingham, W. E. Phillips and H. B. Brown.

Mr. Bingham is vice president of sales for Columbia-Southern and earlier had served as director of sales for the corporation. He joined the firm as a technical service engineer and during his 16 years service with the company has held various supervisory sales positions. He is a graduate of Virginia Polytechnic Institute with a B.S. degree in chemical engineering.

Mr. Phillips has served as a director of the Pittsburgh Plate Glass Co. since 1950 and is board chairman and chief executive officer of Canadian Pittsburgh Industries Ltd., a wholly-owned subsidiary of Pittsburgh Plate. A native of Toronto, Canada, Mr. Phillips was educated at Upper Canada College and the University of Toronto, graduating with a B.A. in science degree.

Mr. Brown has served as a director of Pittsburgh Plate Glass Co. since 1944 and as secretary of the firm since 1939. He is a graduate of Princeton University and the University of Pennsylvania where he received his bachelor of laws degree.

## RENNER FIELD STATIONS

MERKEL, TEXAS—In line with its expanded research program, the Texas Research Foundation of Renner, Texas, is establishing four regional field stations in the state, according to an announcement by the director, Dr. C. L. Lundell. The locations will be at Merkel, Henderson, Taft and somewhere on the High Plains of far West Texas.



Dr. J. Norman Efferson

**BECOMES COLLEGE DEAN**—Dr. J. Norman Efferson, international authority on economics of rice production and an expert in Louisiana agriculture, will become dean of the College of Agriculture, Louisiana State University on July 1, LSU has announced. He is currently director of the LSU Agricultural Experiment Station. Dr. Efferson holds M.S. and Ph.D. degrees from Cornell University and joined the LSU faculty in 1938 as assistant professor of agricultural economics and assistant research economist with the experiment station. A native of Louisiana, Dr. Efferson engaged in local 4-H work, was active in the Future Farmers of America and later served as an international commodity specialist of USDA, visiting some 64 countries in Asia, Africa, Europe and Central and South America to conduct food surveys. In his new assignment, Dr. Efferson will succeed the late Dean J. G. Lee, Jr.





Thomas B. Potter

### Thomas B. Potter Named to Northwest Nitro-Chemicals Post

NEW YORK—Thomas B. Potter, assistant to the vice president, petrochemicals division, Commercial Solvents Corp., has been named secretary and assistant treasurer of Northwest Nitro-Chemicals, Ltd., a Canadian affiliate of CSC, it was announced recently by Howard L. Sanborn, Commercial Solvents' vice president, who is also the treasurer of Northwest Nitro.

Mr. Potter will transfer his headquarters from CSC's general offices in New York City to Northwest Nitro's new \$22 million plant, which is now under construction at Medicine Hat, Alberta, Canada. When completed this fall, the new plant will produce nitrogen-bearing fertilizers for distribution in the prairie provinces of Canada and the Northwestern United States.

Mr. Potter has been associated with Commercial Solvents Corp. since 1925. In his most recent position with CSC, he was concerned with the management and coordination of production, market development and sales for the broad range of industrial, agricultural and automotive petrochemicals made by CSC.

Mr. Potter's business memberships and affiliations include the Chemists' Club of New York, Armed Forces Chemical Assn., American Ordnance Assn., Synthetic Organic Chemical Manufacturers Assn., the Salesmen Association of the American Chemical Society and the American Section of the Societe De Chimie Industrielle, Inc. of France.

Mr. and Mrs. Potter will make their home at 221 Second St., SW., in Medicine Hat, with their 17 year old son, Robert. The Potters have an older son, Ensign Thomas B. Potter, Jr., a graduate of the U.S. Naval Academy, class of 1955, who is now on duty with the navy in the Mediterranean area.

### SPRAYING IN UTAH

LOGAN, UTAH—Utah grainmen have been spraying their fields to control common mustard and red root and other annual weeds, reports Louis A. Jensen, extension agronomist of the Utah State Agricultural College. Many are using 2,4-D before the grain reaches the boot stage at a cost of \$1 to \$1.50 per acre. They find it means increasing yields and easier harvesting, he reports.

### UTAH BULLETIN

LOGAN, UTAH—A new bulletin has just been published by Utah State Agricultural College on crops or diverted dryland wheat acres. The bulletin says that several grasses and alfalfa can be seeded where wheat has been grown—but that in marginal wheat areas, where precipitation is 12 inches or less, more care must be taken in selecting species.

### Seedmen Hear Optimistic Reports On Sagebrush Control

PORTLAND, ORE.—Sagebrush eradication experiments conducted by the Bureau of Land Management and Oregon State college at the Squaw Butte Experiment Station near Burns, Ore., offer "sound reason for optimism" that many thousands of acres of sage-ridden land may be returned to productive use, Douglas McKay, ex-secretary of the interior, told the 30th annual Pacific Seedmen's Assn. convention here recently.

While the Squaw Butte experiments with aerial spraying of 4,000 acres of sagebrush have resulted in a 99% kill, wholesale spraying and re-seeding might be premature, Mr. McKay said.

The experiments are attempting to determine what effect water availability, altitude and time of spraying have on results. An additional 2,000 acres will be sprayed this year in continuing the experiment.

Mr. McKay reported to the seedmen that the Bureau of Land Management, an interior department agency, reseeded 4,000 acres of eastern Oregon rangeland with crested wheat grass in the fiscal year 1956 and will reseed 11,000 acres in the fiscal year of 1957.

David G. Cuthbertson, Mountain View, Cal., was elected president of the association, succeeding Northrup Hamilton of Portland, who was named a director.

Other new officers are Earle E. Humphries, Los Angeles, first vice president; Fred Trullinger, Portland, second vice president; David M. Weston, San Francisco, secretary-treasurer, and Archie Dessert, El Centro, Cal., director.

Monterey, Cal., was chosen for next year's convention. The group decided to back an aggressive public relations program, and adopted a resolution opposing any moves to bring vegetable and flower seeds under a certification program.

James Jenks, Jenks-White Seed Co., Salem, reported there was considerable weather damage suffered by field and farm seed growers of Oregon, Washington and British Columbia during the past winter. He indicated this could mean higher market prices in the future for alfalfa, alfalfa and some grasses.

The representatives of two foreign seed firms expressed appreciation for the fine treatment received from Pacific coast seed growers and distributors. The visitors, W. A. Dentice, Wellington, N.Z., and Rudolf Jordan, Johannesburg, South Africa, said they would purchase a great deal more coast grown seeds if it were not for foreign exchange difficulties.

### Sulfur Production

WASHINGTON—The domestic sulfur industry produced 485,963 long tons of native sulfur and 38,100 tons of recovered sulfur (of a purity of 97% or greater) during March, according to reports of producers to the Bureau of Mines, U.S. Department of the Interior. Producers' stocks of native sulfur increased slightly over the previous month and at the end of March totaled 3,204,568 long tons.

### NEVADA APPOINTMENTS

RENO, NEV.—Dr. E. H. Jensen, now extension agronomist at the University of Minnesota, has been appointed assistant agronomist and assistant professor in the University of Nevada department of agronomy and range management, effective July 1. On July 1 Joe B. Williams will become a research technician in agronomy at the University of Nevada. Thomas A. Hannon and Melvin E. Davison have been appointed as graduate research assistants in agronomy and range management effective July 16.



"WHEAT BELT SPECIAL"—This 68-car train load of high analysis pelleted fertilizer arrived in Omaha recently. It was shipped by Olin Mathieson Chemical Corp. to 27 Nebraska and South Dakota dealers. The shipment contained more fertilizer than either state used in a full year prior to World War II.

### Olin Mathieson Makes Shipment of 68-Car Train Load of Plant Food to Omaha, Neb.

OMAHA—The "Wheat Belt Special," a 68-car train load of chemical plant food, arrived in Omaha recently from the Olin Mathieson Chemical Corp. It is the largest single shipment of fertilizer ever to enter the state, the company said.

Twenty-seven Nebraska and South Dakota dealers, who ordered the fertilizer, returned to Omaha just prior to the shipment from an air trip to Houston, where they watched the product, Ammo-Phos, being manufactured and loaded.

They participated in brief welcoming ceremonies at the Union Pacific's freight station near Jones Street, where a section of the train had been switched. In the evening they were guests at a dinner given by Olin Mathieson at the Blackstone Hotel. Prof. Robert A. Olson, soils scientist from the University of Nebraska, was speaker.

Believed to be the first train of mixed fertilizer ever to enter the state, the shipment contains plant food sufficient to add an additional million dollars to Nebraska or South Dakota's cash-crop income, Olin Mathieson said. It is anticipated that the fertilizer will be used mainly on fall wheat.

The quantity of plant food in this single shipment is greater than all the commercial fertilizer used in the entire state of Nebraska in any year prior to World War II.

"In a time when uncertainty about our farm economy has been expressed, this development is a reassuring indication that farmers themselves have confidence in the outlook," S. Y. Roth, Omaha district manager for Olin Mathieson, said.

"The increasing use of fertilizer in the state means that despite adversities, farmers are continuing to plan to make the best use of their land.

"With 20% of Nebraska's income derived from agriculture, and a third of our population directly dependent on agriculture, anything that increases farm income has a tremendous and immediate effect on every person in the state.

"Farmers in this area have been quick to adopt irrigation, fertilization, insect control and other good

### IOWA MOISTURE LOW

AMES, IOWA—Early June soil moisture supplies were lower than they were in either 1954 or 1955 in all of Iowa except the northeast and some of the east central part. Nearly two-thirds of the state appears to have less than 4 inches of plant-available moisture in the top 5 feet of soil, according to Robert H. Shaw, climatologist at Iowa State College.

### NEW MCA MEMBERS

WASHINGTON—Two new members have joined the Manufacturing Chemists Assn. They are chemical division, Canadian Chemical & Cellulose Co., Ltd., Montreal, and Petroleum Chemicals, Inc., New York.

management programs as recommended by our state extension officials.

"They know that the use of these up-to-date practices is one of the surest ways a farmer can increase his income because higher yields reduce unit costs of production."

While in Houston, the Ammo-Phos dealers were guests at a dinner attended by Gulf Coast agricultural and business leaders. They visited industrial and civic spots of interest in and near the city.

The Olin Mathieson plant which they visited, manufacturing high analysis, pelleted fertilizer, is one of the largest fertilizer plants in the world. Olin Mathieson operates an insecticides plant in Omaha and an irrigation assembly plant and warehouse at Grand Island. The Plant Food Division's district office at 4616 Dodge St. in Omaha serves an 8-state area.

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## Crop Prospects In Mid South Area Show Improvement

MEMPHIS—Crops improved in the Mid-South last week.

Extension officials in Arkansas, Mississippi, Missouri and Tennessee reported rains during the last two weeks have been beneficial to the crops and that crop prospects are good.

Threat of damage to crops from insects—boll weevils, thrips and grasshoppers—is still present but officials said the insects can be controlled.

C. A. Vines, associated extension director of Arkansas, said the condition of cotton, corn and soybeans has improved greatly and the peach crop is expected to be the best in 10 years.

Mr. Vines said the labor supply so far has been adequate because fields have been fairly free of grass and weeds. A rainy spell would bring some labor problems, however.

West Tennessee extension officials

report crops in good condition with cotton fruiting heavily. Corn, soybeans and fruit crops are in good condition also.

Mississippi crops are generally in good shape with plentiful moisture, the Mississippi Agricultural Extension Service said.

T. M. Waller, extension cotton specialist, reported cotton prospects are good. Some fields are becoming grassy and there has been too much moisture in some areas. Cotton insects continue to be present in large numbers and are causing damage to young squares.

Corn, silage crops and pastures have responded to available moisture and are making good growth.

Home gardens are producing heavily, although tomato fruit worms are causing damage to this crop and sweet corn, said K. H. Buckley, associate extension horticulturist.

Mississippi's best peach crop in eight years now is moving in volume on markets. Other truck crops now in

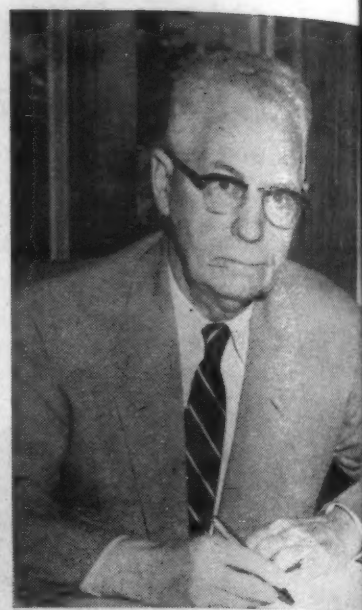
volume movement include tomatoes and peppers. Watermelons are also making an appearance on markets.

Southeast Missouri cotton is showing the first signs of fruiting. The extension service reports squares are starting to appear on most cotton in the Bootheel area.

Terry Rollins, Pomiscot assistant county agent at Caruthersville, said now is the time to spray for grasshoppers to keep them from bothering crops. The hoppers are small and appear along the fences and ditches, he said.

### St. Regis Moves

NEW YORK—St. Regis Paper Co. has announced that it now has new headquarters in the new Socony-Mobil Bldg., 150 East 42nd St., New York City. The firm is occupying the entire 39th, 40th and 41st floors. The new telephone number is OXford 7-4400. All the divisions of the company have moved to the new location.



Dr. R. T. Cotton

### Career Award Goes To Dr. R. T. Cotton, USDA Entomologist

WASHINGTON, D.C.—Dr. Richard T. Cotton, USDA entomologist, authority on insects that attack stored grain and cereal products, to receive on July 2, one of the annual career awards presented by the National Civil Service League. The ceremonies were scheduled to be held at the Sheraton Park Hotel, Washington, at a dinner program.

Dr. Cotton, who is entomologist in the biological sciences branch of marketing research division of Agricultural Marketing Service, receives the award as one who has exemplified in an outstanding manner the primary characteristics of career service: competence, efficiency, character and continuity of service.

During his long career with USDA, Dr. Cotton has performed supervised much of the research directed toward the biology, habits, distribution, and control of stored grain insects.

Most of the American and much of the world literature on this subject has been written by Dr. Cotton. Over 200 articles, bulletins, books and reports carry his name as author or co-author. His book, "Insect Pests of Stored Grain and Grain Products," first published in 1941 and revised in 1950, is the standard text on this subject.

In 1940 Dr. Cotton was selected to the National Association of Manufacturers for its American pioneer award. In 1954 he was presented United States Department of Agriculture distinguished service award. In 1947 he represented the United States at the international meeting on the pest of foodstuffs, sponsored by the Foreign Agriculture Organization.

With the advent of government purchase and storage of surplus grains, the importance of this field study increased. The procedures used today by the Commodity Credit Corporation are based largely on those developed by Dr. Cotton or his staff in past years.

Dr. Cotton was graduated from Cornell University in 1914, and received his Master's degree there in 1918. He took his Doctor of Philosophy degree at the George Washington University in 1924. He is a native of England.

### H. W. Turner, Former Chase Salesman, Dies

KANSAS CITY—Harold W. Turner, 77, long a sales representative of the Chase Bag Co. at Kansas City, died at his home here June 19.

Born in St. Joseph, Mo., he joined the Kansas City branch of Chase in 1904. He worked in various sales capacities for 42 years and was at the time sales manager of the Kansas City branch. He retired in 1946.

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# Better Selling

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## California Agronomist Tells How Even Small Increase in Fertilizer Ups Farm Income

Fertilizer materials are applied on approximately one-third of the farms in California, Oregon and Washington. This is slightly higher than the National average of 29.4%, but on the other hand it is far below that of many other areas. For example, 69% of farms in the South Atlantic States receive fertilizer. Fertilizer is applied on 44% of the farms in the West North Central States and more than 41% of farms in the middle Atlantic States receive some fertilizer.

Sure, we have made great progress here in California, Oregon and Washington, but we still have a long way to go. Any careful study of research data shows that farms on the West Coast could profitably double the amount of fertilizer they are now using. In fact, the use of more commercial plant food would improve their efficiency tremendously. The average return on their investment would be many times that coming from "Blue Chip" stocks. Returns of 50 to 200% are common from fertilizer when properly applied—many times the return expected by the professional investor.

It's not hard to see why the judicious use of fertilizer pays off so well. Here's the reason: The fixed costs are just about the same whether a crop turns out a bumper yield or a puny one. In other words, it costs just as much to plow, work and irrigate the land for a ¼ bale per acre cotton crop as it does for a 2½ bale crop. Naturally, it costs a bit more to harvest the good crop but with mechanical harvesting the cost does not go up in direct proportion to the yield. Therefore, it stands to reason that any nominal expense, such as for fertilizer, that increases yields tremendously, lowers the unit cost of production—for example, the cost per pound of seed cotton.

But back to the fertilizer usage in the States bordering the Pacific Coast. A review of the census data for 1929, 1939 and 1954 shows real progress. In 1929 the three Western States used 176,600 tons of fertilizer. This fertilizer was applied at the average rate of 27 lb. an acre on 29,000 farms. Only 11% of the farms used fertilizer, however.

Here are the comparable figures for 1939. In that year, 274,000 tons of fertilizer were used by 48,000 farmers. The average acre application had increased to 42 lb., and 17% of the farmers were now purchasing commercial plant food.

Now see what has happened. In 1954, census figures show that 1,123,000 tons of fertilizer were used on 92,000 farms. The average rate of application per harvested acre receiving fertilizer had shot on up to 141 lb., with 38% of the farms using fertilizer. That's real progress, but still there is too much yet to do to allow "resting on the oars" until every acre needing plant food is fertilized.

There are some other interesting figures that can be gathered from the census findings. In 1929, the farmer using fertilizer paid on the average of \$90.61 per ton for the fertilizer and

### Editor's Note

Dr. Malcolm H. McVickar, formerly agronomist with the National Plant Food Institute, Washington, D.C., but now with California Spray Chemical Corp., Richmond, Cal., is author of this article entitled "Fertilizers, Past, Present and Future." Dr. McVickar emphasizes here some of the potent economic facts regarding the use of fertilizer materials on various crops.

made a total investment of \$384 per farm. In 1954 the average price per ton of fertilizer had dropped to \$79.39 but the average plant food expenditure per farm, because of the increased application rate and higher percentage of acreage covered, had increased to \$965 per farm. Another way of showing progress is to point out the average tonnage used by farms. In 1929 the average purchase of fertilizer per farm using commercial plant food amounted to 6.1 tons as compared to 12.2 tons in 1954.

A clear road to increase fertilizer usage is seen when one looks at individual crops. The West Coast farmer is currently fertilizing less than 11% of his hay and cropland pasture. The average rate of application, when fertilized, is 249 lb. an acre. The record for improved pasture is not much better—only 14.8% of the acreage covered with an average rate of 254 lb. fertilizer per acre. Thirty-eight and one-half per cent of the corn acreage receives an annual average application of 225 lb. fertilizer per acre. Cotton does better. The average acre application is 381 lb. fertilizer with 84.8% of the crop receiving fertilizer.

The score on fruit, vegetables and potatoes is also interesting. The average acre rate is encouraging—

(Continued on page 14)



### SHOP TALK

### OVER THE COUNTER

### FOR THE DEALER

By EMMET J. HOFFMAN  
Croplife Merchandising Editor

Supermarkets are a steadily growing outlet for insecticides, seeds and numerous lawn and garden needs.

Fifty-five percent of the people questioned in an extensive consumer study by Batten, Barton, Durstine & Osborn, Inc., advertising agency, said their grocers stocked home insecticides. Garden insecticides were obtainable at groceries in 27% of the cases. Seventy-seven percent of the persons said their grocer carried garden seeds.

The sales success of supermarkets in various non-food lines is undeniable, indicating that a dressed up store, complete lines of merchandise, efficient check-out system, attractive displays and other shopping refinements pay off.

It appears that one way for the farm chemical dealer to hold onto his customers and get new ones is to "fight fire with fire," that is, by adopting practical supermarket techniques.

It is the contention of supermarket specialists that if the product is to sell well in their outlets it must sell on sight; the product or its packaging must bring an immediate response from the shopper; the product's uses must be apparent, and advantages must be clearly identified. These are the areas where the farm chemical dealer can advantageously adopt supermarket techniques.

The dealer can—and this is up to him entirely—greatly exceed the supermarket's personal service to the customer. This implies product knowledge, suggestions for its use, technical advice and a much closer seller-buyer relationship. In these areas the farm chemical dealer can far outshine supermarket techniques.

In a few respects the individual dealer will find supermarket merchandising methods almost impossible to match. Grocery store turnover per year is said to be about 13. This rate is high, when compared with less than

(Continued on page 15)

### Idaho Farmers Increase Fertilizer Consumption in 1955

MOSCOW, IDAHO—Idaho farmers used 94,000 tons of fertilizer in 1955, an increase of 10,000 tons over the previous year, Charles Painter, soils specialist of the University of Idaho extension service, has reported.

The report showed an increase in each kind of plant food except gypsum, which declined 170 tons.

Farmers bought 16,000 tons of actual nitrogen, 14,000 tons of phosphoric acid, 4,800 tons of gypsum, 100 tons of sulfur and 315 tons of potash. The total investment in commercial fertilizer was about \$8,000,000.

"Experiments show that in some of the soils of low fertility returns of \$2 to \$7 are obtained for every dollar invested in fertilizer," Mr. Painter pointed out.

### PLENTIFUL PEST

PORTLAND, ORE.—The omnivorous leaf-tier, a caterpillar-like pest, is more plentiful in Oregon than for several years, Joseph Capizzi Jr., survey entomologist for the state agricultural department, reported recently.

### DEMONSTRATION FARM SHOWS

## Good Grassland Management Profitable

MOSCOW, IDAHO—The 80-acre Bonner County grassland demonstration farm near Sandpoint, Idaho is demonstrating how the right kind of grasses and legumes, handled under the right kind of management and getting the right kind of fertilizers can boost forage production on run-down, low fertility land. G. O. Baker, soils technologist with the Idaho Agricultural Experiment Station, reports.

The farm, east of Sandpoint, is the only grassland demonstration farm of its kind in Idaho.

"The basic points in forage production being demonstrated on this farm will apply to run-down, low-fertility land anywhere," says Mr. Baker, a member of the technical committee in charge of plans and procedures for the farm. The owner of the farm, Blaine Marks, operates on the plan developed in cooperation with that committee.

Last year's report from the technical committee shows the \$453 additional money invested in ferti-

lizer in 1955 returned \$1,025 in increased hay and pasture production.

The report shows hay production in 1955 increased one-third over the previous year. Carrying capacity of the pastures increased two and a third times. Walter McPherson, Bonner County agent, figures the increased yield amounted to about \$2.30 for every additional dollar invested in fertilizer.

Records kept by Mr. Marks on his dairy herd show how he cashed in on the boost in forage production. Total dairy output for 1955 was 95,998 lb. of milk and 4,067 lb. of fat. Production the previous year was 72,068 lb. of milk and 2,774 lb. of fat.

Sponsoring this grassland demonstration farm are the Pacific Northwest Plant Food Assn., the University of Idaho Agricultural Experiment Station and Extension Service, several agencies of the U.S. Department of Agriculture, and Bonner county farm and commercial groups.

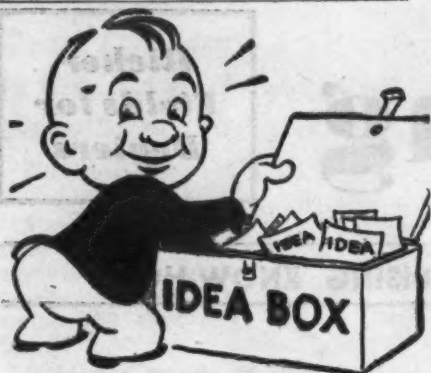
The plant food association contri-

buted \$1,000 toward the purchase of fertilizer. Area seed dealers contributed grass and legume seed sufficient for 28 acres of new pasture and hay seedlings. The demonstration farm was set up on a three-year plan.

The soil improvement committee devoted considerable time to selection of a farm for this grassland demonstration. Wanted was one with a history of low production but with a high potential. Some of the fields, in the farm chosen, produced only 8 bu. of grain an acre. The old bluegrass pastures were run-down.

"In one year," explains Mr. Baker, "the farm stands as an excellent illustration of how the proper grasses and legumes for the area, plus the right kind of management and fertilizers can increase forage yields. One of the important points demonstrated is the superiority of the newer grasses and legumes. Seeded pastures have yielded far above the older pastures."





## What's New...

### In Products, Services, Literature

You will find it simple to obtain additional information about the new products, new services and new literature described in this department. Here's all you have to do: (1) Clip out the entire coupon and return address card in the lower outside corner of this page. (2) Circle the number of the item on which you desire more information. Fill in your name, your company's name and your address. (3) Fold the clip-out over double, with the return address portion on the outside. (4) Fasten the two edges together with a staple, cellophane tape or glue, whichever is handiest. (5) Drop in any mail box. That's all you do. We'll pay the postage. You can, of course, use your own envelope or paste the coupon on the back of a government postcard if you prefer.

#### No. 6437—Cattle, Barn Spray

The McLaughlin Gormley King Co., Minneapolis, has announced that its new "MGK Repellent 11" has been accepted and registered by the Food and Drug Administration and the U.S. Department of Agriculture for pesticide use on dairy cattle and in dairy barns. This new repellent, a butadiene derivative, is the first and only pesticide registered for such use since the passage of the Pesticide Residue Amendment, according to the firm. Cattle, barn and dairy sprays including "MGK Repellent 11" repel flies, mosquitoes and roaches. They have a residual efficiency of at least 72 hours when properly formulated and applied, they require no FDA tolerance, do not contaminate milk and are completely safe for consumers of dairy products, the firm states. The new chemical was developed by Phillips Petroleum Co., and McLaughlin Gormley King Co. is operating under a license in the marketing of this new repellent. For more information check No. 6437 and mail the coupon.

#### No. 6431—Slide Set on Alfalfa

A slide set on alfalfa production has been assembled by the American Potash Institute, Inc., with the help

of several cooperators. A detailed script to accompany the slides is also available. Covered in the slides and script are such topics as uses of alfalfa, advantages, nutrient requirements and 10 steps to successful alfalfa production. The 10 steps involve a soil test, liming as needed, use of corrective fertilizers, preparation of a weed-free seed bed, use of certified, inoculated seed, use of starter fertilizer followed by regular fertilizer applications annually, tissue tests to detect nutrient deficiencies, insect control and proper cutting and grazing. The slide set and script are obtainable on a rental basis or can be purchased in any quantity desired. To secure more complete details check No. 6431 on the coupon and mail it to this publication.

#### No. 6432—Nitrogen Solutions Film

"How to Use Nitrogen Solutions" is the title of a new film recently released by Nitrogen Division of Allied Chemical & Dye Corporation. It deals with the use of nitrogen solutions for direct application and covers many phases of this method. Using a step-by-step approach, it tells how nitrogen solutions are handled, stored and applied. Many different types of applicators are shown in use on farms of the Midwest and South. The film

is aimed directly at the farmer and is designed to answer his most common questions about nitrogen solutions. Original ballad music lends an entertainment flavor. The new movie runs 14 minutes and is 16 mm, sound and color. Clubs, schools, companies and farm organizations may borrow a print at no charge. To secure more complete details check No. 6432 on the coupon and mail it to Croplife.

#### No. 6433—Fertilizer Plant Equipment

New literature has been prepared by the Chemical Engineering Service division of Manitowoc Shipbuilding, Inc., describing its granulators, hopper systems and other fertilizer plant equipment. A folder describes the firm's small pelletizing unit. Characteristics claimed for this unit are: It may be shut down, fully loaded, and restarted at any time; no dust build up; no sulphuric acid required on low nitrogen grades and moisture content 2.5% or less. Outlined in a booklet is a description of hoppers and mixing systems manufactured by the company. The systems are available in automatic, semi-automatic or manual designs. The 26-page booklet includes cost comparison charts, allowing the operator to compare his present costs with those under the firm's hopper system. Secure the literature by checking No. 6433 on the coupon and mailing it to Croplife.

#### No. 6436—Anhydrous Ammonia

The Agricultural Ammonia Institute has published a folder entitled, "Producing Quality Corn More Efficiently with Agricultural Ammonia." Recommended practices, such as when, how and the quantity to be applied on corn are outlined. Testimonial statements from farmers and soils authorities are printed in the folder, as are five specific advantages for using anhydrous ammonia. Secure the folder by checking No. 6436 on the coupon and mailing it to Croplife.

### Also Available

The following items have appeared in the What's New section of recent issues of Croplife. They are reprinted to help keep retail dealers on the regional circulation plan informed of new industry products, literature and services.

#### No. 6428—Grasshopper Film

The Shell Chemical Corp. has produced a film on grasshopper control for farmer meetings and other events. The film, "Exit Grasshoppers," a full-color, 10 min., 16 mm. sound movie, is available to county agents. The movie describes grasshoppers, the damage they do and how they are controlled with modern insecti-

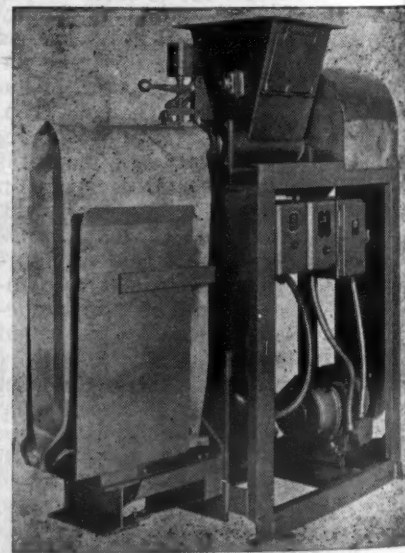
cides. Recommended control practices are shown for both crop and range land. Filmed during two recent grasshopper wars, the film tells how aldrin Shell insecticide, has been used to treat infestations. It shows a U.S. Department of Agriculture cooperative control project over millions of acres, and a University of Wisconsin aldrin spray demonstration in severely infested crops. Check No. 6428 on the coupon, clip and mail it to secure more complete details about securing the film.

#### No. 6424—Calcium Nitrate

A detailed booklet titled, "Calcium Nitrate for Wheat Production in the Pacific Northwest," has been printed by Wilson & Geo. Meyer & Co. The booklet, researched and written by Harley D. Jacquot, formerly with the State College of Washington, Pullman, is intended as a guide for Pacific Northwest wheat growers. Covered are such topics as need for nitrogen fertilizer for wheat, soil and climatic description in the Pacific Northwest, moisture and soil relationships, nitrogen-protein correlation, nitrogen utilization, soil fertility, cropping system, crop sequence, wheat varieties, temperature, soil moisture, time of fertilizer applications, results of experiments and field trials and future potential needs of fertilizer. The booklet may be secured by checking No. 6424 on the coupon and dropping it in the mail to Croplife.

#### No. 6430—Volumetric Packer

The automation principle applied to a bag packer in a manner that employs the bulk material being packaged to act as the motivating power source is one of the features of the new model VP Volumetric packer, recently announced by the H. L. Stoker Co. A company official states: "We are proud to announce this unit, with its special features, as a machine that almost thinks for itself, assuring uniformity of content volume with auto-



mated settling of material. We feel that it offers higher productivity, and surer volume control with an absolute minimum of care." Complete data on the unit is available without charge. Check No. 6430 on the coupon and mail it to secure more complete details.

#### No. 6423—Applicator Kit

New literature has been prepared by the Krause Corp. on its tractor-mounted applicator for liquid fertilizer. The applicator, which comes in kit form, permits the "farmer-owner" to top dress or side dress with liquid nitrogen or other solutions at the exact time and rate he desires," according to company officials. The literature states that the heart of the applicator is a hose pump which is actually 12 pumps in one. A revolving reel applies pressure to 12 short lengths of plastic hose, creating pumping action in the same manner

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WICHITA, KAN.—501 KFH Building

the text. Free copies of the brochure are available by checking No. 6422 on the coupon and mailing it to Croplife.

### No. 6425—Aphid Control Booklet

An 18-page booklet prepared by the agricultural chemicals division, American Cyanamid Co., is entitled, "Control the Spotted Alfalfa Aphid With Malathion." The booklet considers the seriousness of the pest, history and spread of the aphid, damage to alfalfa, how to identify it, host plants, controls, advantages of malathion, how to use the product and points to remember in a control program. Advantages claimed for malathion are: Effective control in all areas, safety in handling, may be used next to barns and livestock, suitable for treatment for alfalfa to be fed to cattle, effective for mites, weevil larvae, leafhoppers and other alfalfa pests and availability in spray and dust formulations. The booklet is available without charge. Check No. 6425 on the coupon and mail it to Croplife.

### No. 6429—Formulation Pad

A sample formulation pad for use in fertilizer mixing is being distributed free by the Nitrogen Division of Allied Chemical & Dye Corp. Mixing companies can use the sample as a suggested design in making up their own formulation pads, company officials state. The pad contains 90 identical forms which mixers can use in recording ingredients used in any given mixture. Inside covers of the pad carry three sets of tables: (1) Detailed analyses of nitrogen solutions; (2) the number of pounds of each solution that must be used to add specified units of nitrogen; (3) the equivalent acidity or basicity of all commonly used nitrogen carriers. A copy of the formulation pad may be obtained free by checking No. 6429 on the coupon and mailing it to Croplife.

### No. 6426—Liquid Mixed Fertilizer

The Midstate Machinery Co. has prepared a brochure entitled, "Everything You Need to Manufacture and Sell Liquid Mixed-Fertilizer." Three separate liquid mixed-fertilizer plants have been designed by the company, according to the brochure. Each one can be assembled and erected locally or can be purchased with erection completed. Capacities range from 10-30 tons per hour. All plants incorporate the scale system, and ingredients are weighed as they are added during the manufacturing process. Described in the brochure are the company's facilities for providing equipment, training, chemical formulas, cost data, sources of supply and merchandising aids. To secure the brochure check No. 6426 on the coupon and mail it to Croplife.

### Systemic Insecticide for Walnut Pest Control Is Boon for California Crop

BERKELEY, CALIF.—The Federal government's temporary extension of permission to use OMPA, a systemic insecticide, is expected to be of benefit to California walnut growers, researchers at the University of California state.

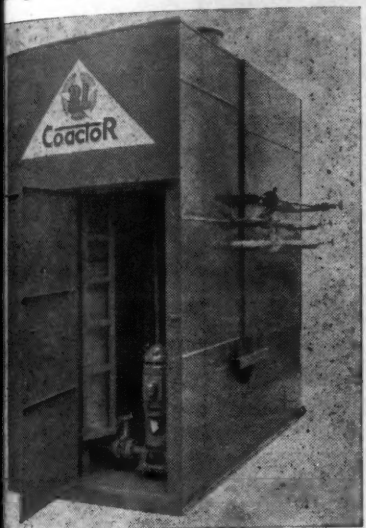
Abraham E. Michelbacher, associate professor of entomology, said the Government's action, announced recently, will make it possible for many growers to use "the most remarkable insecticide yet found to control the walnut aphid."

The extension allows growers to use OMPA until July 22. Mr. Michelbacher urged that growers follow label instructions carefully and warned that satisfactory control cannot be achieved unless the chemical is thoroughly applied with equipment capable of reaching the tops of trees.

milking a cow. If less than 12 outlets are required, hose may be ganged with "Y" fittings. Interchangeable nozzles provide any desired rate of application. The rate is said to remain constant regardless of ground speed, providing positive control of amounts applied. Secure more details in free literature which is available. Check No. 6423 on the coupon and drop it in the mail to Croplife.

### No. 6427—Liquid Fertilizer Plant

A new, continuous flow, neutral solution liquid fertilizer plant has been introduced by chemical plants division of Barnard & Leas Manufacturing Company, Inc. Claimed to be



the heart of the plant is the "B&L Coactor," a self-contained liquid fertilizer processing unit. It consists of an automatic controlled reaction circuit with circulating pumps, evaporative cooling system and all necessary internal piping. It is designed for ready installation by connecting raw material supply lines, finished product lines and wiring for power. The "Coactor" receives raw material direct from tank cars and produces a neutral solution liquid fertilizer that can be stored in ordinary non-pressure black iron tanks, company officials state. A wide range of ammonium phosphate solutions and complete fertilizer formulas can be produced as well as aqueous ammonia. Any soluble insecticides and weed killers can also be added to the solutions without destroying their effectiveness, it is claimed. The unit is automatic in operation. Controls are pre-set for the desired formula and can be changed for producing various fertilizer solutions. Automatic safety control instantly stops material flow if raw material supply is shut off. The unit is available in capacities up to 10 tons per hour. Complete details may be obtained by checking No. 6427 on the coupon and mailing it to Croplife.

### No. 5469—Conveyor

A 4-page bulletin on the new Farquhar Ve-Be-Veyor aluminum power belt conveyor is available without charge, according to an announcement by the manufacturer, A. S. Farquhar Division, the Oliver Corp. The bulletin, which is fully illustrated, gives information on the construction advantages incorporated in the conveyor. Complete specifications, including such information as frame construction, dimensions, weights of the three sizes available and motor power, are explained. To secure a copy check No. 5469 on the coupon and mail it to this publication.

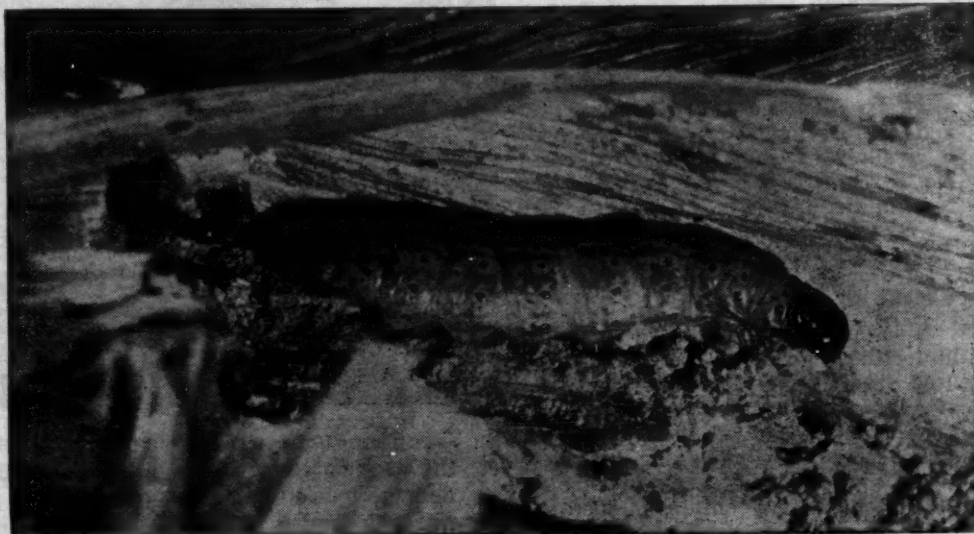
### No. 6422—Brochure

A 16-page brochure about its origin, formation, operations and three subsidiaries has been published by Minerals & Chemicals Corporation of America. Also included are applications for the company's products, among which are carriers and diluents in pesticides and wettable powders, drying agents, catalysts and others. Nearly 60 pictures illustrate



## BUG OF THE WEEK

Mr. Dealer--Cut out this page for your bulletin board



### European Corn Borer

#### How to Identify

The European corn borer in its larval stage, is a pinkish worm ranging in size from  $\frac{3}{4}$  to an inch in length. Small brown spots are on its back. Distribution of the borer now covers practically all the corn-growing area of the U.S. It has spread from New England since its discovery in 1917.

#### Habits of the Corn Borer

Two strains of the borer exist in the U.S.: one which passes through one life cycle a year and the other which has two or more complete cycles, depending upon the environment. The latter exists in nearly all the infested areas. Eggs laid in masses of 15 or 20 or more on the underside of leaves, hatch in from 4 to 9 days. The newborn borers crawl to protected places on the leaves and begin to feed on the immature leaves and tassels, finally boring into the stalks and ears. They mature in about a month and after providing an exit for the adult moth, change to pupae inside the tunnels. In 10 to 14 days, the adult moths emerge from the pupal cells and lay about 400 eggs each on corn or other plants that they may find in a suitable stage of growth. Moths live from 10 to 24 days and during this time are active fliers in evenings or nights. Thus, they may migrate for several miles. The insects pass the winter in the borer stage inside stems of corn or other plants. They change to moths late in spring or early in summer to begin another season of destruction.

#### Damage Done by Corn Borer

Because it is a boring insect, greatest injury results from its tunneling within the stalk, ears, tassel, midrib of the leaf, brace roots and practically all other parts of the plant except the fibrous roots. Character of injury depends upon the stage of development of the corn plant when the infestation takes

place. If the attacked plant is just developing a tassel, some of the small borers enter the buds and feed within; others eat the surface of the tassel buds. If the infestation comes at the time of pollen shedding, accumulations of pollen provide satisfactory feed for the insects. Later, they tunnel inside the tassel stem and its branches often causing them to break over. Such broken tassels, with sawdust-like borings at the breaks, are signs of infestation. Likewise, small holes in the stalks, with bunches of dusty borings at or below them, indicate the area where the worm is at work. Borers may continue to tunnel upward or downward, weakening the plant so much that it frequently breaks and falls over. Injury to stalks and ears may be increased even further by the entrance of disease organisms through the lesions made by borers. Despite efforts at control this pest does millions of dollars in damage each year.

#### Control Methods

Since the borer's life is spent largely within the plant, many of the recommended practices for control are of cultural nature. However, insecticidal materials have been found effective. DDT either in oil or applied in dust form has been indicated for sweet corn or seed corn. As soon as the borer eggs begin to hatch, applications of DDT dust may begin and continue at 5 to 7 day intervals three or four times. Either ground or air equipment may be used. Dusting with 2% parathion has also been mentioned favorably, as have rotenone, nicotine, derris and Ryania. (No DDT on corn to be used as animal forage.) Cultural means include the shredding of stalks, plowing under clean in the fall or early spring before moths emerge, and if all else fails, burning infested stalks. Check with local authorities as to amounts of pesticide to use in order to avoid excessive residues.

Photo of European corn borer furnished Croplife through courtesy of Illinois Natural History Survey.

Previous "Bug of the Week" features have been reprinted in attractive 24-page booklet, priced at 25¢ single copies; reduced rates in quantities. Write Croplife Reprint Dept., Box 67, Minneapolis 1, Minn.



## What's Been Happening?

This column, a review of news reported in CROPLIFE in recent weeks, is designed to keep retail dealers on the regional circulation plan up to date on industry happenings.

Some 30,000 acres in Colorado were sprayed for grasshopper control as starter in a 212,000-acre total in Las Animas and Baca counties. It was announced that there is a possibility of spraying another 10 or 12 thousand acres in Douglas county. Bids were let on June 22, for 300,000 acres in Union, Quay and Harding counties. Additional acres in Texas were also for treatment against grasshopper infestations.

An increase of 16% in the output of organic agricultural chemicals was reported by the U.S. Department of Agriculture for 1955. A total of 484 million pounds of chemicals was produced in 1955 as compared to 419 million in 1954, the U.S. Tariff Commission reported.

The agricultural chemical industry expressed varied opinions on the effect the soil bank would have on plant food sales this season, with both pessimism and optimism being noted. The only favorable aspect of the soil bank, so far as the plant food industry is concerned, appeared to be in the corn belt. Production reduction of most crops will not be significant, which means that surpluses will not be reduced substantially.

More than 1,100 persons attended the first annual meeting of the National Plant Food Institute in White Sulphur Springs, W.Va. June 10-13. Edwin H. Dixie, Dixie Guano Co., Laurinburg, N.C., was elected chairman of the board, and Charles T. Prindeville, Swift & Co., Chicago, was named president.

The International Cooperation Administration announced it will make a study of the U.S. fertilizer aid program for Korea. The U.S. has been providing Korea with about \$50 million worth of chemical fertilizers a year . . . A federal-state program for control of gypsy moths was being undertaken on 10,000 acres in parts of New York, New Jersey and Pennsylvania.

Results of a survey sent out to 48 states and U.S. territories by Rodney Barry, state chemist of Virginia, indicate that the use of fertilizer and pesticide mixtures is growing throughout the nation. More states than ever before report that such mixtures are legal and are being used in increasing numbers within their borders.

United Heckathorn Co., Richmond, Cal., was awarded a contract for spraying 180,000 acres in Florida for control of the Mediterranean fruit fly which had infested a strip 10 miles wide and 35 miles long. Three applications of malathion were to be made, and soil applications of dieldrin and heptachlor will also be made in some areas.

A fertilizer consumption report issued by the National Plant Food Institute showed a decrease of 1.3% in overall tonnage for the calendar year 1955, as compared to the previous 12-month period. However, due to the manufacture of increasingly high analysis mixed fertilizers, the plant food content of the total was expected to show a slight increase. The total tonnage of fertilizers, as compiled by the Institute, was 20,416,410 tons. The previous high, in 1954, was 20,679,026 tons.

Although tonnages of fertilizers shipped thus far in the 1956 season do not measure up to those of last year, still the nutrient content of these materials was expected to hold up because of higher grades of mixtures. This indicated the U.S. Department of Agriculture in its supplemental report on the fertilizer situation for 1955-56. Trade observers, however, predicted that much of the tonnage loss may be made up later in the season.

A frost of record proportions was expected to damage New England crops to the extent of \$10 million, according to reports from the states comprising this group. Crops affected by the frost included strawberries, sweet corn, peppers, beans, cucumbers, spinach and tomatoes.

International Minerals & Chemical Corp. announced that it would build a factory for the production of chemical plant food mixtures at Fairfax, Minn. The announcement was made by Maurice H. Lockwood, vice president in charge of the IMC plant food division. The new plant was expected to be in production in time for the 1957 season.

New approaches to weed control were discussed at the recent weed control conference held at Rutgers University, New Brunswick, N.J. USDA and University experts described the results of recent tests with various chemical compounds.

The new farm bill was regarded as a potential boon to the plant food industry, since the bill's provisions would encourage the use of fertilizer to achieve greater production on fewer acres, particularly in the corn belt states.

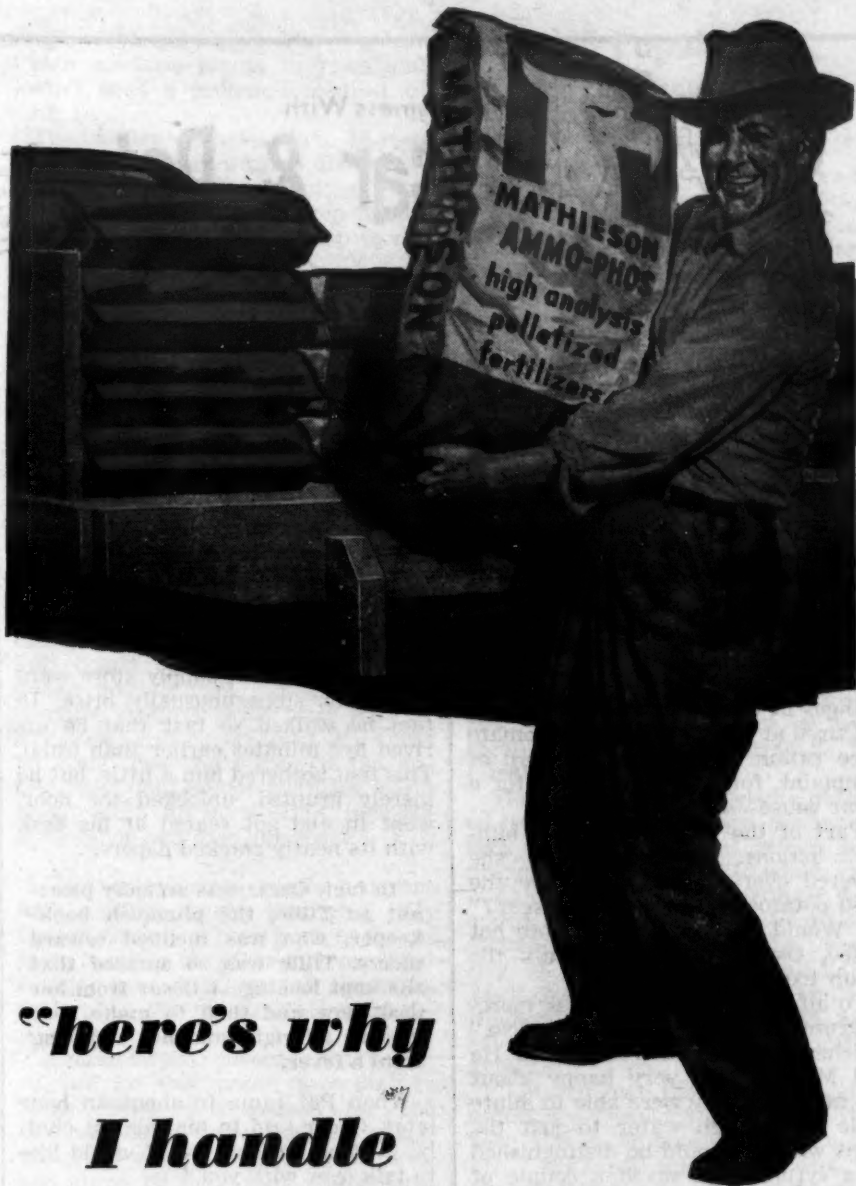
Results of two long-term U.S. Department of Agriculture studies on soil-saving practices showed that crop yields on reclaimed land could be greatly increased through the rebuilding of eroded slopes and increasing fertility levels through the application of plant foods. The tests were made in the vicinity of Waco, Texas.

The farm bill passed by Congress was expected to act as a stimulus to fertilizer sales in the U.S., according to USDA interpretations. However, a controversial issue was seen in the question of whether or not USDA would permit commercial corn belt farmers to comply with the original acreage allotment of 43 million acres, or the higher 51 million acre allotment, in order to participate in the soil bank program as outlined in the bill.

The Maryland Governor's Safety-Health conference at Baltimore devoted an entire day to fertilizer safety. Speakers included Curtis A. Cox, Virginia-Carolina Chemical Corp., Richmond, Va., national chairman of the fertilizer section, and representatives of the National Plant Food Institute and the fertilizer manufacturing trade.

Albert L. Taylor was named to succeed Dr. Gotthold Steiner, as head of plant nematology research in the U.S. Department of Agriculture. Dr. Steiner recently retired after a career of 34 years in the department.

Emphasis was placed on the specificity of pesticides of the future, by speakers at the recent Western Agricultural Chemicals Assn. meeting at Los Angeles. Speakers described newly-developed insecticides, fungicides and weed killers.



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Doing Business With

## Oscar & Pat



By AL. P. NELSON  
Croplife Special Writer

Breakfast at the Schoenfeld's was a daily ritual of considerable planning and timing. Oscar, the portly, balding husband got up at exactly 6 a.m. every week day morning. Fifteen minutes later he walked downstairs, freshly shaved and clothed, to sit down to a breakfast of tomato juice, fried eggs and potatoes, or bacon and wheatcakes, sweet rolls and coffee.

The tomato juice came from tomatoes in Oscar's home garden. He and Minnie annually put up quarts of juice so they would not have to buy oranges in the winter. Although both got tired at times of the daily tomato juice ration, neither said a word of complaint, for their action was for a great cause—saving money.

Part of the ritual concerned Minnie's actions. While Oscar ate, she hovered over him, saying, "Are the fried potatoes warm enough, Oscar?" or "Would you like a little more hot coffee, Oscar?" or "Did I mix the syrup too thin for you?"

To all these questions Oscar merely grunted replies of "Yes," or "No," whichever the occasion demanded. He and Minnie were very happy about the fact that they were able to dilute table syrup with water to just the point where it could be distinguished as a syrup. That saved a couple of dollars a year.

Now Oscar put down his fork, his eyes shining, as he slowly chewed on fried potatoes. "Oh, what's the matter, Oscar?" Minnie said fearfully clasping her hands nervously. "Is—something wrong?"

"Nein!" exclaimed Oscar. "Nothing is wrong. Something is good, Minnie. Something is good!"

"Oh?"

Oscar smiled slightly, which was as far as he would concede to a jovial, happy mood. "At last, Minnie, I have an idea. That Irish, Pat, ah, he will be surprised."

Minnie stood transfixed. She had never seen Oscar so happy, not even when they took in \$67 in cash gifts at their wedding. "All these years, I have been waiting for a good idea to match one of Pat's," he said. "Now I got it."

He got up from the table and grab-

bed his hat from the elk-headed coat rack in the hall.

"What is the idea, Oscar?" asked Minnie. Nervously she stroked her black hair, done in a knot at the back of her head.

Oscar straightened. "I will tell that Irish first, ah, then tonight I will tell you." At the door he halted for an instant. "To celebrate tonight, Minnie," he said, "let us have spare-ribs, with the sauerkraut. We can afford it, even if it is only Wednesday. But do not go overboard. About a pound of meat is enough."

Off to the farm supply store went Oscar, his steps unusually brisk. In fact he walked so fast that he arrived five minutes earlier than usual. This fact bothered him a little, but he merely grunted, unlocked the door, went in and got seated at his desk with its neatly stacked papers.

In fact, Oscar was actually pleasant to Tillie, the plumpish bookkeeper, who was inclined toward ulcers. Tillie was so amazed that she kept looking at Oscar from her desk now and then to make sure he was all right and not suffering from a fever.

When Pat came in about an hour later, Oscar said to him almost civilly. "I have an idea, Pat, I would like to talk over with you."

Pat McGillicuddy was quite surprised. "An idea? Why, Oscar, I'd be glad to. You know I always like ideas. What have you thought up?" He sat down at his desk, facing Oscar, a new light in his eyes. After all, he thought, maybe the fellow was warming up. If this was true, life could be much more pleasant between them.

Oscar coughed importantly. "Ach, Pat," he said, "we pay our employees good wages, don't we?"

"We certainly do, Oscar. Our wage scale compares with any in town, I think, in the farm field."

Oscar nodded thoughtfully. "And the employees always get paid on time, although it is a close call for us because of slow collections now and then?"

"Right," grinned Pat. It was he who was responsible for collections.

"Well," said Oscar, holding a sharp pencil in his pudgy fingers, "if an employee gets about \$70 a

week from us, what is wrong with giving him \$60 cash and the other \$10 in merchandise?"

Pat was so surprised he said nothing for a moment. But his face was aghast. "Why should we do something like that?" he asked.

"Well, most of the employees have gardens and some have chickens," Oscar said slowly, his eyes glowing with eagerness. "They need fertilizer, insecticides, garden tools and feed. They could use these products, ah, and we would make a full profit on them."

"But," said Pat, "they couldn't use \$10 worth a week. Some buy a little of that stuff from us now, but I'm afraid if we insisted that they take \$10 a week, they would complain."

"They have relatives they could sell to," Oscar insisted. "Let them do a little extra selling in their off hours. And they would know how hard it is to run a business. And, don't forget we make full profit on each \$10 worth per week."

Sadly Pat shook his head. "Oscar, it just won't work. The employees expect to get paid in cash. They do not want part of their pay in merchandise. In fact, they would get so grumpy about it, they would quit or lay down on the job. I'm sure of it."

Oscar's face had settled into a hostile, stubborn expression. "You are too soft with them!" he snapped. "They would do it, ah, if we told them they had to."

Once more Pat shook his head. "No, I'm sorry, Oscar, I can't side with you on that." And he got up and walked into the warehouse.

Oscar looked defiantly at Tillie, but the plumpish bookkeeper was bent over her typewriter doing some erasing. Oscar sat still and looked at his desk, and his face became more stubborn. Then when Tillie got up to go to the restroom, Oscar telephoned to his wife.

"Minnie," he thundered into the phone. "Do not buy any spareribs for supper. We will eat just the sauerkraut and the cheese and crackers. Yes, I said no meat. GOOD BYE!"

## California Appoints Stewart Lockwood

SACRAMENTO, CAL.—Stewart Lockwood, field entomologist with the California Department of Agriculture since 1929, is the new assistant chief of the department's Bureau of Entomology.

Announcement of Mr. Lockwood's appointment, effective May 31, was made by W. C. Jacobsen, State Director of Agriculture. Mr. Lockwood was selected from a civil service list created to fill the vacancy caused by the promotion of Robert Harper to chief of the bureau.

The new appointee is a native of Richmond, Kansas, and received his education at Baker University, Baldwin, Kansas, and at the University of Minnesota. Following 11 years with the U.S. Department of Agriculture engaged in grasshopper control work in North Central states, Mr. Lockwood joined the California department. He served three years as an officer in the armed services during World War II. For several years he was California state leader in the federal-state grasshopper control program.

## Fertilizer Program For Oregon Test Farm Announced

PORTLAND, ORE.—Details of the fertilizer program for the Lennox Blatchford Oregon Farm Demonstration Project near Hillsboro, Ore. have been announced by Grant Braun, chairman of the Soil Improvement Committee of the Pacific Northwest Plant Food Assn.

Fertilization is being based primarily on soil test results and general recommendations from Oregon State College for pastures in the Willamette Valley. Soil samples were taken from each field and the results were interpreted by Dr. Tom Jackson, Oregon State College extension soils specialist, in regard to the fertility level of each crop being grown.

About 73 acres comprise the Blatchford farm and in general the fertilizer program is as follows: nitrogen, from three sources will be used on all pastures; sulfur and boron, both from two sources, are being used on all legumes; a complete fertilizer 5-10-10 has been applied on 15 acres and six additional acres will receive an application of potash. Most fields will be limed. Also test strips of phosphorus and potash have been set out on fields not receiving applications of these elements to insure the fertilizer program next year.

From a soil test summary standpoint, as determined by Oregon State College for pastures in Washington County about 27% of the soils need phosphorus. For Willamette Valley pastures, about 60% of the soils need phosphorus and 25% need applications of potash, Mr. Braun said.

"When this project is viewed from a soil test aspect and also from the standpoint that proper fertilization will result in more dollars on the farm, the over-all significance of the Oregon Farm Project is that it represents a large fertilizer potential for pastures in the Willamette Valley," Mr. Braun said.

## M. H. McVICKAR

(Continued from page 9)

642 pounds where fertilized, but only 59.7% of the land devoted to these crops is receiving commercial plant food.

More and better fertilizers are in the picture for the West Coast farmer to help him reduce his unit production costs. It's the job of everyone interested in a progressive agriculture to help the farmer make the right investment for maximum profits. He must be guided in purchasing the right analysis fertilizer for his crops; he must use the right amount at the right time, placed where the crop can pick it up, for maximum profits. But it must be remembered also, that fertilizers are no substitute for other good management practices.

Fertilizers when used along with other recommended practices, pay handsome dividends. On the other hand their use can conceivably lose the farmer money, if for example, he applies it on a weedy, insect-infested field. The job can't be half done. The farmer must improve his lot by becoming more efficient. He'll use more fertilizer, more insecticide, apply the irrigation water efficiently and become a better customer for a thousand and one items. He'll prosper and so will the industry.

## OFFICE BEING MOVED

PORTLAND, ORE.—Oregon state potato commission office is being moved from Redmond to Salem.



AT IRRIGATION MEETING—J. W. Pruett, champion Mississippi cotton grower, Dr. G. G. Williams, Olin Mathieson Chemical Corp., and Dr. W. L. Giles, superintendent of the Delta Branch Agricultural Experiment Station, Stoneville, Miss., inspect irrigation equipment at a recent farm conference held at McGehee, Ark., sponsored jointly by W. B. Loyd & Sons, irrigation dealer, and Olin Mathieson Chemical Corp., manufacturer and distributor of irrigation systems. Nearly 300 farmers present heard talks by extension agronomists, a banker, a county agent, a working farmer and a commercial agronomist.





## FARM SERVICE DATA

### Extension Station Reports

Need for phosphate fertilization in California is increasing each year, according to the California Fertilizer Assn. In spite of the high phosphorus content of most California soil when it was in its virgin state, before man plowed it to crops for human and animal consumption, there has been a heavy net drain of this vital plant food element for many years. The need for supplemental phosphate is most evident in the production of field and vegetable crops on valley lands, and forage crops on upland soils.

Dr. Frank T. Bingham, assistant chemist, Department of Soils and Plant Nutrition, University of California, Riverside, made this statement during a phosphate panel discussion at the fourth annual California Fertilizer Conference:

"The outlook for phosphorus is really bright. Tonnage figures for phosphorus fertilizers handled each year in California have increased 600% since 1940 and undoubtedly will continue in this fashion for some time. Millions of acres are involved. For instance, of the approximate 10,000,000 acres of valley lands, some 50% are considered to be deficient in phosphate if planted to most field and vegetable crops.

"The immediate surrounding lands, the terrace soils representing an additional 7,500,000 acres, are even more deficient, percentage-wise. The upland soils comprise the largest area by far, over 50,000,000 acres, and most of these lands are low in available phosphorus. To date, phosphorus fertilization is practiced in only the first two groups and even then to a restricted degree."

In closing his panel outline, Dr. Bingham said, "Soil and leaf analyses are very useful tools for modern agriculture and, in connection with phosphorus, their use will aid the grower and producer by making far more efficient use of phosphorus fertilization. Greater yields of field and vegetable crops, pasturage, and timber are in store with proper fertility management."

Evenly applied fertilizer results in rapid, uniform growth, even crop maturity, and higher yields. This careful application can also help produce earlier blooms on cotton, according to Lyman Amburgey, extension soils specialist at the University of Arizona.

He advises: where side-dressing equipment is used to fertilize cotton, adjust it to put down the fertilizer evenly along the rows; where fertilizer is applied by mixing it with irrigation water, be sure each field is irrigated evenly. Then, each plant gets an equal share of the water and fertilizer.

A new "Ton Per Acre Nut Club," designed to help orchardists lower the cost of nut production in the Pacific Northwest, has been approved for this year, according to C. O. Rawlings, Oregon State College horticulture specialist.

The new activity is sponsored by the Nut Growers Society of Oregon and Washington. Objectives of the club are to "foster, encourage, and call attention to those practices that will increase production per acre and promote the general welfare of the walnut and filbert industries in Ore-

gon, Washington and British Columbia."

Last year, more than \$6 million worth of nuts were produced in Oregon. There are also sizeable nut industries in both Washington and British Columbia.

To be eligible for the club, a nut grower must have at least five acres of walnuts, filberts, a combination of the two, or the same acreage in nut trees planted among other tree crops. Yields must be reported for the entire nut-bearing acreage on the grower's farm.

Cotton crop production requires both nitrogen and phosphate on many of California and Arizona cotton soils, says the California Fertilizer Assn.

The association reports a gross return of \$237 per acre over the unfertilized area, when 100 lb. actual nitrogen and 120 lb. actual phosphorus pentoxide ( $P_2O_5$ ) were applied in the Lakeview area of Kern County. A return of \$137 was due to fertilizer use near Tulare. In this case 100 lb. nitrogen and 60 lb.  $P_2O_5$  were applied. In both cases, the phosphate content of the fertilizer applied returned the growers about \$5 for every \$1 spent for phosphate.

A new Wyoming Range seeder for dryland prepares a seedbed, plants grass and legumes and places fertilizer in one operation.

Developed by the research agricultural engineering staff at the University of Wyoming, the seeder holds promise for practical use on Wyo-

oming's dryland range. The tractor-drawn machine plants in rows and doesn't need a prepared seedbed to work in.

The seeder includes two 18-inch sweeps, one 5 inches below the other. The top sweep skims off trash and root crowns; the lower sweep makes a seedbed about 4 inches deep in the cleared strip.

The machine plants in 40-inch rows and leaves 22 inches of undisturbed vegetation between rows. Early tests show that the 22-inch strip of native growth will produce as much forage per acre as range untouched by the machine.

As the machine plants seed, it can also apply fertilizer. The lower sweep places fertilizer at the bottom of the tilled soil directly below the seed.

In initial tests, seeding 2 lb. of crested wheatgrass per acre and a half pound of alfalfa an acre produced good stands. Using a 2-row machine required a 3-4 plow tractor. The outfit will cover about 2½ acres an hour. The trials showed the entire operation, except fertilizer, costs about \$3.25 an acre. That includes seed, labor and machine costs.

Colorado's khapra beetle program will continue again this year. Although there has been none of the insects found in the state a close watch is being kept. Last year all elevators, feed mills, etc. in the state were inspected.

A more intense coverage will be developed for this season, according to Herb Gates, entomologist for the Colorado State Department of Agriculture. Two men from the state level and three or four from the federal government will continue to devote a portion of their time to the project.

In addition to the facilities inspected last year—those that were most likely to become infested, there will be inspections of grocery stores and other smaller points.



**NUTRO CONTEST WINNERS**—C. M. Miller, center, owner of the Little Creek Hardware, Norfolk, Va., is shown above receiving a congratulatory handshake and check for \$50 from Albert Fary, right, Nutro sales manager for the Smith-Douglass Co., Norfolk. Mr. Miller received first prize for his Nutro window display in a contest held in North and South Carolina, Virginia, West Virginia and Ohio. Wilson Harrell, left, salesman for the Berkley Feed Co., Norfolk, distributor of Nutro, received a prize as the distributor-salesman submitting the most entries. Contestants were asked to furnish a photograph of a Nutro display erected in their place of business, with all entrants being awarded a Zippo lighter. From the entries submitted throughout the five-state area, Mr. Miller's display in his hardware store window won first prize.

# Better Selling

Richer Sales Fields for Dealers

## Growing Popularity Of Quick Tissue Tests Described

LOS ANGELES — Quick tissue tests, which determine crop deficiencies in time to apply required plant nutrients, have become increasingly popular during the past five years, according to R. L. Luckhardt, agricultural technical service supervisor, Brea Chemicals, Inc., of Los Angeles.

In a report presented recently before the Western Soil Science Society meeting at the University of Washington Mr. Luckhardt said that the extensive use of "quick" nitrate and phosphate tests by representatives of fertilizer concerns was a service to Western growers.

"Both tests are used to measure the availability of plant food from the soil to the crop. The fertilizer representative can easily demonstrate to the grower his crop deficiencies by color comparisons and thus make specific recommendations for a well-balanced fertilizer program," Mr. Luckhardt said.

The report included results obtained from using these tests in comparisons of vegetable yields grown on a phosphate-deficient soil to which various rates of phosphate fertilizer were added. Tests were cooperatively conducted on crops grown at the University of California's Imperial Valley Field Station, where tissue samples of the same plant food elements were subjected to comparative laboratory analysis.

"Lettuce gave the highest response to fertilizer, producing maximum yield with 160 lb. of phosphate per acre," Mr. Luckhardt said. "This was followed by cabbage, at an application rate of 80 lb. per acre, and carrots and onions which produced well at a rate of 60 lb. per acre," Mr. Luckhardt said.

In each test, the color response from the tissue samples was directly related to the additions of fertilizer and yield increase.

Brea technical service representatives, in cooperation with Brea dealers, have been using the "quick test" technique as a service to their grower-customers. The nitrate test used on the experiments is not as yet commercially available.

## OVER THE COUNTER

(Continued from page 9)

three for hardware stores, 2.8 for department stores and 2.4 for children's and infants' wear stores. Further, there is the comparatively low gross margin which Dun & Bradstreet estimates as 15.9% for grocery stores.

## Signs Tell Why

A forward-looking step was taken at the Missouri Soil Fertility and Plant Nutrition Council's recent meeting at Columbia. Plans were made to buy metal signs to identify many of the state's fertilizer test plots of the extension service.

Test plots should be thoroughly advertised and promoted and one of the best ways is by identifying them prominently with signs. Only then can visitors and neighbors be properly educated and impressed with the results of improved farming practices.

## Customer Satisfaction

Throughout the entire history of business relations, from the days of barter to the present-day complex system, nobody has come up with a substitute for customer satisfaction.

Closing a sale is not the end of a business transaction. It is successfully over when the customer achieves complete satisfaction with the product he has purchased.



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## MEMO

TO: Advertisers to the Fertilizer Industry

SUBJECT: **CROPLIFE's Fall Fertilization**  
**Special Issue of July 23**

Every advertiser interested in the fertilizer industry has a big stake in the promotion of fall fertilization. CROPLIFE, the only weekly newspaper serving the agricultural chemical industry, will publish a special "FALL FERTILIZATION" issue—July 23, 1956—which will editorially feature this important subject, and provide an unprecedented opportunity to place before the industry and midwest dealers your advertising message!

Here's a capsule preview of this special issue:

**Fall Fertilization:** discussion of economic advantages and agronomic aspects involved in fall application ... of problems faced by industry in trying to manufacture and store adequate amounts of plant food materials and then attempting to deliver year's output in brief spring period ... photos showing spring jam of trucks and farmers "fighting" for supplies of fertilizer ... plus tie-in editorial comment on wastefulness of this buying pattern ... a graphic presentation of Dr. Firman E. Bear's map showing areas where soil is adaptable to fertilizer application in the fall.

**Agronomists Express Viewpoints:** statements of college and industry agronomists on fall fertilization.

**Directory of Available Sales Helps:** special section of July 23 CROPLIFE will feature an illustrated "catalog" of sales aids available to dealers from fertilizer suppliers ... descriptions of materials geared to help dealers promote fall application of fertilizers ... sources of newspaper ad mats, store banners, window decals, mailing pieces, counter displays and allied point-of-sale material.

**Question-and-Answer Feature:** dealer-readers of the July 23 CROPLIFE will find accurate replies to questions and/or objections of farmers on fall fertilization in a comprehensive "question-and-answer" page.

**How One Dealer's Idea Clicked:** one of the highlights of CROPLIFE's "Fall Fertilization" issue will be an attention-compelling article—a true "success story"—of the unique ways a Midwest dealer promoted sale and application of fertilizer during fall months.

# PLAN YOUR ADVERTISING NOW!

Plan your advertising now for CROPLIFE's special "FALL FERTILIZATION" issue! An unusual opportunity to tie-in with great news and feature coverage of a timely and important subject. Contact your nearest CROPLIFE office for complete details and any service our sales representatives can offer.

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## Fete Marks Opening Of St. Regis Branch At Kansas City

KANSAS CITY—Company representatives, multiwall bag users and civic officials helped the St. Regis Paper Corp. open a new Kansas City branch multiwall bag plant June 21. The facilities which will service customers in the Midwest and Southwest employ 160 persons.

Open house festivities started with a luncheon at the Hotel Muehlebach. Toastmaster was Frank Myers, mid-west district sales manager, Chicago. Welcoming St. Regis to Kansas City was H. Roe Bartle, Kansas City mayor. Adding words of appreciation was Robert Sweet, president of the Kansas City Chamber of Commerce, and speaking for St. Regis was Kenneth D. Lozier, vice president, New York. Mr. Bartle presented Mr. Lozier with a key to the city.

This is the second time St. Regis has established manufacturing facilities in Kansas City. First operations were moved out in 1949 as the large Pensacola, Fla., plant was put into production. With the return to Kansas City, St. Regis plans to stress individual service and quick delivery of bags to the flour, feed and fertilizer industries in the immediate 10-state area, Mr. Lozier declared.

Following the luncheon the several hundred guests toured the plant under the direction of company employees. The three luncheon speakers received the first three bags off the assembly line.

Following the open house a reception was held at the Presidential suite at the Hotel Muehlebach. Other hosts at the event were Clyde Stinebiser, manager of the Kansas City plant, and Frank Rendler, sales manager of the Kansas City division.

## Medfly May Be in Arizona, Entomologist Says

PHOENIX—It is quite possible that the Mediterranean fruit fly has already entered Arizona, according to W. T. Mendenhall, state entomologist.

The insect has not yet been found within the state, he said, but there was probably a two to three year span when the insect went unnoticed in Florida, and it could have been brought westward during that time. He said that lack of funds prevented inspectors from making a thorough search of all baggage coming in from overseas, and the fruit fly probably entered the country that way.

When the fly was discovered in Florida on April 13 of this year, Arizona immediately stopped all shipping permits from the Southern half of Florida, unless the producers followed federal fumigation procedure. Now all vehicles entering Arizona from the east are stopped and searched for citrus fruit.

## George B. Moran Joins Freeport Sulphur

NEW YORK—George B. Moran has joined Freeport Sulphur Co. as vice president, it was announced June 28 by Langbourne M. Williams, president.

Mr. Moran, until accepting this position with Freeport, has been a vice president of the Hanover Bank. He joined the Hanover Bank in 1946 as assistant secretary and has been manager of the branch at 1460 Broadway since its opening in 1954. In his new association with Freeport, Mr. Moran will act as vice president in charge of domestic and foreign sales.

## MINNESOTA CROPS DAY

ST. PAUL—July 6 will be "crops day" at the University of Minnesota's Rosemount Agricultural Experiment Station, 20 miles south of the Twin Cities. A. C. Heine, station superintendent, says the program begins at 10 a.m.

## Colleges Get Unrestricted Grants from Hercules

WILMINGTON—Twenty one U.S. colleges and universities have been given unrestricted grants-in-aid totaling \$70,000, it was announced recently by Hercules Powder Co. This brings the company's annual contribution for education to more than \$150,000.

"This is a unique and original approach to an aid-to-education program for Hercules, primarily because of the unrestricted nature of these grants," Albert E. Forster, president and board chairman of the company, said.

The new program of unrestricted grants, which augments the company's scholarship policy, affects twenty-one schools during the first year of its adoption, but it is planned to be extended in the future to other colleges and universities.

## French Firm Awards Contract for C&I Nitric Acid Plant

PARIS—Potasse & Engrais Chimiques (PEC) of Paris, France has recently awarded a contract to Chemical and Industrial International, Ltd. of Nassau, Bahamas for a C&I designed nitric acid plant.

Chemical and Industrial International, Ltd. has exclusive rights to license C&I processes outside of the United States and Canada, and will furnish and supervise the construction of the 150 ton per day C&I nitric acid plant for PEC at Grand Couronne, France where large nitrophosphate plant is located.

This is the first C&I designed high pressure nitric acid plant to be built in Europe where the atmospheric, or low pressure, plants have been popular for many years. This decision by PEC shows a trend in Europe toward the almost standard method in the United States of producing nitric acid by the high pressure process, a company spokesman said.

## CENSUS

(Continued from page 1)

equipment in 1954 totaled \$45 million. The insecticide and fungicide industries in 1954 added \$60 million by manufacture, compared with \$25 million in 1947. Cost of materials in 1954 totaled \$109 million, value of shipments was \$169 million and capital expenditures totaled \$3 million.

In 1954 the insecticide and fungicide industries had six million employees with a payroll of \$25 million, according to the census. Of these four million were production workers, with a payroll of \$13 million.

## McLaughlin Gormley King Names Canadian Agent

MINNEAPOLIS—McLaughlin Gormley King Co. has announced the appointment of Allied Basic Chemical Co., Ltd. of Toronto and Montreal, Canada as its agent on MGK's full line of chemicals, as of July 1.

Harry Smith, president of Allied Basic Chemical Co., will personally supervise the sales efforts on the MGK line. Allied Basic Chemical Co. operates offices in Toronto and in Montreal. The Toronto address is 35 Anderson Ave. and the Montreal address, 1100 Craig St. E.

## NEW CARBON PLANT OPENS

EUNICE, N.M.—A new carbon black plant with an annual capacity of 25 million pounds has been opened here by Continental Carbon Company, an affiliate of Witco Chemical Company of New York City. The furnace-type plant, first of its kind to be built in New Mexico, will produce carbon black through the controlled combustion of natural gas.

## SOIL BANK

(Continued from page 1)

obtain full corn certificate values if they plow under, clip or mow down oats, barley, rye or grain sorghums.

For this plowed-under land they can obtain a soil bank certificate valued at 90¢ bu. for corn times the normal yield of the cutback land of those other crops.

This soil bank operation in the commercial Corn Belt is little less than cash in the bank for the commercial corn farmer. At the same time he can increase his income if he plans to increase his yield of corn on his permitted acres through application of fertilizer and use of pesticides.

Other aspects of the provisions of the soil bank for 1956 concerning drouth land or blown out land will have little bearing for the plant food industry, but they will make available some small payments this year.

It would be wise now for dealers to go immediately to county Agricultural Stabilization and Conservation committee offices to learn which farmers have signed up for soil bank contracts.

The names of those farmers cooperating in the soil bank is the best prospect list ever obtained. They may mean the difference between empty shelves this fall and carryover inventory.

## OREGON LEAFLET

CORVALLIS, ORE.—Spray programs to control most of the insects and diseases that attack raspberries, blackberries and other cane fruits in Oregon are outlined in a leaflet just published by the Oregon State College extension service. Some of the more common insects and diseases are described in "Spray Schedule for Diseases and Insects of Cane Fruits," prepared by Robert W. Every, entomologist, and I. C. MacSwan, plant pathologist. Included is a spray and dust schedule chart for handy reference.

## Inorganic Chemical Output in April Shows Gain Over Year Ago

WASHINGTON—April production of synthetic anhydrous ammonia totaled 306,172 short tons, compared with 316,734 short tons in March and 286,567 short tons in April a year ago, according to the U.S. Department of Commerce.

Production of fertilizer grade ammonium nitrate, original solution, in April totaled 167,147 short tons, compared with 196,357 short tons in March and 148,259 short tons in April, 1955. Output of synthetic ammonium sulfate was 92,725 short tons in April, down from 98,910 short tons in March, but a gain from 90,042 short tons in April a year ago.

Nitric acid (100% HNO<sub>3</sub>) production totaled 211,650 short tons in April, compared with 233,094 short tons in March and 201,956 short tons in April, 1955. Production of phosphoric acid (50% H<sub>3</sub>PO<sub>4</sub>) was 312,054 short tons in April, compared with 331,581 short tons in March and 311,551 short tons in April, 1955.

## Illinois Fertilizer Conference Planned

URBANA, ILL.—The 1956 Illinois Fertilizer Industry Conference will be held at the University of Illinois here July 26-27. The July 26 program will start at 1 p.m. in Gregory Hall, and will include talks by University of Illinois staff members and fertilizer industry representatives. Discussions will continue the evening of July 26.

July 27 will be devoted to tours of the Morrow plots, the South Farm and the Agricultural Engineering Farm.

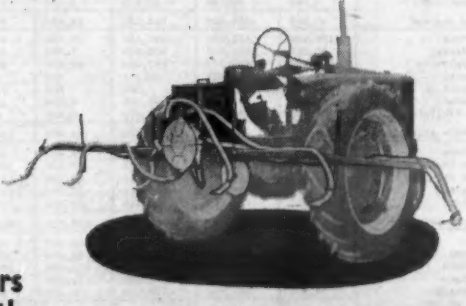
## SMALL BUSINESS LOAN

WASHINGTON—Small Business Administration has approved a loan of \$85,000 to Crest Chemical Co., Waukegan, S.D., a manufacturer of chemical fertilizer.




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Dust or  
Spray

5 & 6 Row Blue Dusters  
featuring high strength  
aluminum alloy fan  
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row crop insect control. Featuring Blue-Twin Piston PTO  
Pump.

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**JOHN BLUE CO., Inc.**  
Huntsville, Ala.



## FERTILIZER CONSUMPTION

(Continued from page 1)

Missouri, North Carolina, South Carolina and Texas). For the latter seven states the data were compiled chiefly from the reports of the respective fertilizer control officials. No data were available for Alaska.

Supplementary information was furnished by the control offices and other state agencies, as well as by fertilizer brokers, and special inquiries were made of all known distributors and custom applicators of anhydrous ammonia and nitrogen solutions. For the first time, this annual report includes the separate tonnages, by states, of anhydrous ammonia, ammonium nitrate-limestone mixtures, nitrogen solutions (including aqua ammonia) and urea.

Heretofore the regional distribution of these products (except ammonia and urea) was reported. Only the total tonnage of anhydrous ammonia was shown in the preceding annual reports while the tonnage of urea was included in "other chemical nitrogen materials."

The quantities are reported as 2,000 lb. tons. Although the data refer to shipments, the terms "consumption," "sales," and "shipments" are used synonymously. The actual consumption differs slightly, no doubt, from either the shipments or sales.

The consumption of the two classes of fertilizers, mixtures and materials, is summarized by states and regions in Table 1. Regional gains in the consumption of all fertilizers occurred in the New England, Middle Atlantic, Mountain and Pacific regions and the Territories. Total use in these areas was 473,994 tons greater than in 1953-54. More than one half of the gain was in California. The South Atlantic and the four Central Regions showed a combined decrease of 523,788 tons; of which more than one half was in Illinois.

Consumption in each of 27 states, the District of Columbia, and both the Territories, representing 44.18% of the total tonnage in 1954-55 in the U.S., was higher than that of the preceding year.

Compared with the tonnages for each six-month period of 1953-54, most of the increase in total consumption of all fertilizers in 1954-55 occurred in the July-December period. Consumption for this period in 1954-55 was 147,409 tons (2.47%) above that for the corresponding period of 1953-54, while for the January-June period consumption was 197,203 tons (1.17%) below the quantity for the same period of 1953-54.

In Table 1, the percentage change in consumption of fertilizers in 1954-55 as compared with 1953-54 is based on the tonnage of primary nutrient fertilizers only, in order that a direct comparison may be made with the percentage change in consumption of the primary nutrients themselves.

Regional distribution of the consumption of fertilizer between mixtures and materials in 1953-54 and 1954-55 is shown in Table 1a, as percentages of the country totals.

Table 1a—Regional Percentage Distribution of Consumption of Fertilizer Mixtures and Materials

Region	Mixtures		Materials	
	1953-54	1954-55	1953-54	1954-55
New England ..	2.26	2.37	0.89	1.01
Mid. Atlantic ..	11.83	12.38	3.19	3.12
So. Atlantic ..	32.31	32.11	15.50	15.62
E. N. Central ..	23.30	22.94	16.62	13.50
W. N. Central ..	8.64	8.37	12.18	12.20
E. S. Central ..	13.13	13.12	13.61	12.51
W. S. Central ..	4.59	4.61	9.42	8.93
Mountain .....	0.36	0.33	4.66	5.08
Pacific .....	1.75	1.94	22.15	25.85
Territories .....	1.83	1.83	1.78	2.18

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\*Includes the secondary and trace element materials.

Mixed fertilizers consumed in the U.S. and Territories amounted to 15,347,850 tons, as compared with 15,541,076 tons in 1953-54. The quantity

Table 1—Fertilizer Use, Year Ended June 30, 1955<sup>1</sup>

State & Region	Mixtures			Materials <sup>2</sup>			All Fertilizers <sup>3</sup>			Relative Consumption <sup>4</sup>	
	July 1 - Dec. 31, 1954	Jan. 1 - June 30, 1955	Total	July 1 - Dec. 31, 1954	Jan. 1 - June 30, 1955	Total	1953-54	1954-55	Total	Percent	Percent
Alaska	18,484	184,848	203,332	1,116	1,116	2,232	100	100	205,564	100	100
Arizona	1,800	18,000	19,800	1,000	1,000	2,000	100	100	19,800	100	100
Arkansas	2,880	28,800	31,680	1,440	1,440	2,880	100	100	31,680	100	100
California	10,340	87,878	98,218	5,170	11,322	16,492	100	100	114,710	100	100
Colorado	1,840	18,400	20,240	920	920	1,840	100	100	20,240	100	100
Connecticut	9,800	98,000	107,800	4,900	4,900	9,800	100	100	117,600	100	100
Delaware	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
District of Columbia	790	7,900	8,690	395	395	790	100	100	8,690	100	100
Florida	74,180	741,800	815,980	3,709	37,090	40,799	100	100	856,779	100	100
Georgia	11,740	117,400	129,140	5,870	58,700	64,570	100	100	193,710	100	100
Idaho	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Illinois	148,980	1,489,800	1,638,780	7,449	74,490	81,939	100	100	1,720,719	100	100
Indiana	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Iowa	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Kansas	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Kentucky	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Louisiana	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Maine	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Maryland	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Massachusetts	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Michigan	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Minnesota	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Mississippi	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Missouri	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Montana	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Nebraska	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Nevada	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
New Hampshire	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
New Jersey	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
New Mexico	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
New York	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
North Carolina	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
North Dakota	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Ohio	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Oklahoma	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Oregon	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Pennsylvania	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Rhode Island	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
South Carolina	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
South Dakota	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Tennessee	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Texas	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Utah	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Vermont	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Virginia	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Washington	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
West Virginia	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Wisconsin	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Wyoming	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Territories	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100
Total	1,160	11,600	12,760	580	580	1,160	100	100	12,760	100	100

<sup>1</sup> Includes: Ground phosphate rock, basic slag, secondary and trace element materials, such as, bone, sulfur, manganese sulfate, etc., used as separate materials, also fertilizers distributed by government agencies. Does not include liquid materials, but includes nitrogen.

<sup>2</sup> Includes the quantities of materials used for manufacture of commercial mixtures.

<sup>3</sup> Fertilizers which were guaranteed to contain primary plant nutrients (N, P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O).

<sup>4</sup> Not available: Consumption of all fertilizers in 1953-54 amounted to 855 tons.

of mixtures comprised 67.54% of the total fertilizer tonnage in 1954-55, as compared with an average of 67.28% for the preceding five-year period. In 1954-55, there was 1,750 grades designated by their guaranteed analyses, an increase of 431 over those so designated in 1953-54. This difference is largely the result of the more complete reporting of mixtures by specified grades in 1954-55 than in 1953-54. Among the individual states, the total number of grades designated by their guaranteed analysis ranged from 21 for New Mexico to 849 for Florida.

Consumption of individual grades of mixtures in total quantities of 2,700 tons or more in the Continental U.S. is shown in Table 2. In 1954-55, there were 176 of these grades totaling 14,558,704 tons and accounting for 96.62% of the total quantity of mixtures. Other designated grades numbered 1,462, totaling 381,336 tons and accounted for 2.53% of the quantity of mixtures. The balance of 128,147 tons (0.85%) were reported under unspecified designations.

Consumption of mixtures in Hawaii and Puerto Rico totaled 279,663 tons in 164 grades (all specified). While many of the grades in Puerto Rico are similar to those used on the continent, most of those in Hawaii are designated in fractional numbers.

The tonnages of the 15 grades most used in the Continental U.S. are shown in Table 2a. These grades accounted for 60% or more of the total tonnage of mixtures consumed in the Continental U.S. in both 1953-54 and 1954-55. Grades 3-12-12, 5-10-10, 5-10-5, 10-10-10, and 4-16-16 were the grades consumed in largest tonnage in both years, in the order named.

Table 2—Mixed Fertilizer Use by Grades

Grade	Consumption/		Proportion of Total		Grade	Consumption/		Proportion of Total	
	1953-54	1954-55	1953-54	1954-55		1953-54	1954-55	1953-54	1954-55
	Tons	Tons	Percent	Percent		Tons	Tons	Percent	Percent
0-8-24	8,468	8,115	0.04	0.03	8-9-12	84,609	81,089	.36	.34
0-8-27	16,810	16,888	.10	.11	8-9-27	3,033	2,753	.02	.02
0-10-10	4,587	3,886	.03	.02	8-10-4	87,216	71,956	.37	.43
0-10-20	49,130	86,888	.32	.37	8-10-8	2,064	3,629	.01	.05
0-10-30	45,006	45,806	.30	.30	8-12-4	3,383	3,376	.02	.02
0-12-45	3,769	3,228	.02	.02	8-12-8	51,806	31,456	.24	.34
0-12-12	28,720	28,720	.19	.19	8-12-12	370,373	289,373	1.21	1.86
0-12-24	2,976	2,791	.02	.02	8-12-20	4,833	4,601	.03	.05
0-12-36	8,564	7,691	.06	.05	8-24-0	21,838	13,597	.14	.09
0-14-6	4,411	3,286	.03	.02	8-24-12	63,087	65,377	.28	.43
0-14-7	32,590	7,047	.21	.05	8-24-24	13,866	22,433	( <sup>2</sup> )	.02
0-14-10	8,200	8,108	.06	.06	8-26-0	686	3,148	.01	.04
0-14-16	177,499	129,382	1.18	.88	8-27-7	36,488	29,881	.24	.20
0-15-30	17,996	16,380	.12	.11	8-28-8	3,183	8,706	.02	.04
0-15-45	332	3,154	( <sup>2</sup> )	.02	8-28-12	2,549	3,368	.02	.02
0-15-60	22,982	23,180	.17	.17	7-14-7	3,614	2,733	.02	.02
0-20-10	23,906	16,079	.15	.11	8-0-8	16,084	16,007	.11	.11
0-20-20	343,162	341,795	2.25	2.27	8-0-12	6,626	6,465	.04	.04
0-24-24	804	7,822	.01	.06	8-0-24	20,080	20,995	.13	.14
0-25-25	20	10,333	( <sup>2</sup> )	.07	8-4-8	3,389	5,908	( <sup>2</sup> )	.02
0-30-18	8,828	9,266	.06	.06	8-4-8	37,179	41,829	.24	.28
0-30-30	11,080	16,623	.07	.12	8-4-7	15	3,237	( <sup>2</sup> )	.02
2-10-8	8,044	6,173	.05	.04	8-5-4	5,443	6,610	.04	.04
2-12-6	81,054	84,921	.53	.50	8-5-6	3,339	4,199	.02	.03
2-12-12	404,036	438,393	2.65	2.91	8-5-8	7,545	3,721	.03	.02
2-12-18	4,302	2,813	.03	.02	8-5-12	0	3,800	.00	.02
3-4-6	12,745	12,084	.08	.08	8-5-12	261	3,134	( <sup>2</sup> )	.02
3-9-6	608,256	494,506	3.99	3.28	8-5-4	20,037	19,033	.13	.13
3-9-9	489,239	494,438	3.21	3.28	8-5-6	284,471	226,634	1.67	1.80
3-9-12	28,981	29,624	.19	.19	8-9-10	8,876	7,641	.04	.04
3-9-15	8,506	11,291	.06	.07	8-10-12	11,742	11,876	.05	.05
3-9-18	113,708	80,324	.78	.53	8-12-6	0	5,140	.00	.02
3-9-27	123,964	108,448	.81	.73	8-12-12	27,853	39,478	.18	.28
3-10-12	6,309	4,602	.04	.03	8-12-18	17,081	17,501	.11	.12
3-12-6	278,386	210,639	1.82	1.60	8-12-8	7,082	5,860	.06	.04
3-12-12	1,730,944	1,413,625	11.54	9.58	8-12-16	94,782	128,178	.62	.87
3-12-18	72,765	80,074	.50	.53	8-24-8	101,069	85,837	.66	.64
4-4-6	0	3,013	( <sup>2</sup> )	.02	8-24-12	6,883	9,418	.04	.06
4-6-6	18,883	11,966	.12	.08	8-24-20	75,178	63,110	.47	.41
4-6-8	49,399	43,472	.32	.29	8-24-8	6,981	10,089	.06	.07
4-7-6	130,530	117,708	.86	.78	8-26-8	3	3,650	( <sup>2</sup> )	.02
4-8-6	15,987	12,799	.09	.08	8-9-9	2,205	3,579	.02	.05
4-8-6	370,689	248,738	2.10	1.65	9-38-0	2,322	3,524	.03	.05
4-8-8	393,334	280,857	1.96	1.86	10-0-10	44,797	29,688	.29	.20
4-8-10	87,888	97,888	.56	.60	10-0-12	4,839	4,744	.02	.02
4-8-12	51,941	56,399	.34	.37	10-0-10	4,887	2,783	.04	.02
4-9-3	78,442	89,546	.50	.48	10-0-8	2,689	3,067	.02	.03
4-10-6	498,719	424,671	3.27	2.82	10-5-10	640	4,262	( <sup>2</sup> )	.02
4-10-7	852,415	840,994	5.62	4.28	10-5-4	35,284	60,540	.23	.27
4-10-10	9,313	8,649	.06	.05	10-6-10	379	5,210	.01	.05
4-12-4	148,214	104,084	.99	.78	10-10-10	8,007	8,703	.05	.06
4-12-6	162,806	149,971	1.00	1.00	10-10-6	80,799	22,329	.20	.16
4-12-12	370,014	501,692	2.43	3.33	10-10-10	701,365	718,133	4.60	4.81
4-12-16	8,831	9,314	.05	.02	10-15-15	2,893	4,824	.02	.03
4-16-8	87,486	80,901	.54	.51	10-16-6	9,949	7,601	.07	.05
4-16-16	898,177	728,786	4.68	4.86	10-20-0	117,049	102,838	.71	.68
4-16-12	56,070	36,089	.38	.25	10-20-3	2,208	2,805	.01	.02
5-3-3	1,778	3,076	.01	.02	10-20-10	48,714	8,662	.32	.28
5-3-6	8,640	3,802	.02	.03	10-20-20	2,008	18,143	.06	.12
5-5-6	2,664	6,812	.02	.06	10-20-10	3,624	8,211	.02	.05
5-6-6	8,206	6,861	.06	.04	11-8-4	20	3,131	( <sup>2</sup> )	.01
5-6-6	2,702	3,685	.02	.02	12-0-8	2,094	3,276	.01	.03
5-6-8	7,363	12,764	.06	.08	12-0-10	14,146	19,020	.09	.13
5-7-8	26,058	11,400	.14	.14	12-0-12	8,149	9,909	.03	.04
5-8-7	16,840	14,311	.11	.10	12-0-16	2,889	3,760	( <sup>2</sup> )	.04
5-8-8	4,680	3,683	.03	.02	12-4-6	5,883	5,683	.02	.02
5-10-3	681,116	784,044	8.38	8.07	12-15-6	3,786	3,704	.02	.02
5-10-10	1,287,746	1,379,763	8.44	9.16	12-12-12	208,922	206,861	1.37	1.24
5-10-12	99,404	111,168	.69	.74	12-24-0	11,743	8,272	.08	.06
5-10-20	7,218	8,761	.06	.08	12-24-12	31,356	27,357	.21	.21
5-12-10	10,040	7,718	.07	.05	12-24-16	24,156	31,495	.18	.21
5-12-12	17,519	28,010	.11	.12	14-0-14	38,992	46,804	.25	.28
5-12-30	4,747	8,310	.03	.04	14-14-14	2,682	33,782	.03	.02
5-20-10	44,710	86,880	.29	.37	14-20-12	4,437	2,649	.03	.02
5-20-20	300,808	564,263	1.97	3.74	15-0-4	1,021	4,045	.01	.06
5-20-6	26,162	23,416	.17	.17	15-0-8	6,451	6,731	.06	.06
5-4-6	12,047	16,280	.07	.10	15-0-16	86,402	55,437	.58	.42
5-4-8	21,804	36,744	.14	.26	15-20-0	3,082	2,706	.01	.02
5-6-8	81,097	77,082	.55	.51	15-30-0	0	3,968	( <sup>2</sup> )	.02
5-6-8	16,169	16,469	.09	.11	16-8-8	610	3,313	.01	.06
5-6-9	3,488	3,325	( <sup>2</sup> )	.02	16-10-0	9,888	7,775	.04	.12
5-6-12	11,069	11,492	.08	.08	17-0-0	19,708	17,312	.14	.12
5-6-18	11,874	13,016	.08	.09	20-0-20	4,447	7,369	.03	.06
5-7-7	6,072	4,787	.04	.02					
5-8-2	3,329	2,938	.03	.02	378 Grades	16,786,129	16,256,704	96.71	96.91
5-8-6	189,852	123,456	1.31	.82	Other specified grades	379,404	3/ 581,326	2.40	2.93
5-8-6	160,820	169,488	1.19	1.20					
5-8-6	160,124	169,124	1.19	1.20					
				</					



Table 3—State and Regional Consumption by Grades<sup>1</sup>

State	Fifteen Principal Grades Consumed in Region															All Other Grades		Total
	8-10-10	8-10-12	8-12-12	8-12-14	8-14-14	8-14-16	8-16-16	8-16-18	8-18-18	8-18-20	8-20-20	8-20-22	8-22-22	8-22-24	8-24-24	Unbranded	Other	
New England																		
Maine	15,749	80,388	34,086	12,730	0	0	0	0	0	0	0	0	0	0	0	0	0	135,949
New Hampshire	1,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,000
Vermont	1,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,000
Massachusetts	15,411	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15,411
Rhode Island	7,075	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7,075
Connecticut	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	39,235	80,388	34,086	12,730	0	0	0	0	0	0	0	0	0	0	0	0	0	154,058
Middle Atlantic																		
New York	183,612	139,772	13,417	62,082	36,931	12,875	26,545	3,974	15,070	0	0	0	0	0	0	0	0	394,099
New Jersey	141,066	26,380	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	167,446
Pennsylvania	278,953	31,171	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	310,124
Delaware	47,476	2,109	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49,585
District of Columbia	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
Maryland	85,344	27,480	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	112,824
West Virginia	20,012	5,235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25,247
Total	745,086	209,611	132,586	169,522	36,931	12,875	26,545	3,974	15,070	0	0	0	0	0	0	0	0	1,009,088
South Atlantic																		
Virginia	41,358	124	7,959	194,775	24,054	120,899	1,000	0	0	0	0	0	0	0	0	0	0	271,097
North Carolina	189,088	270,798	3,830	189,186	300,661	201,779	1,000	0	0	0	0	0	0	0	0	0	0	871,612
South Carolina	199,486	133,228	23,799	0	42,132	19,104	28,736	0	0	0	0	0	0	0	0	0	0	384,651
Georgia	60,775	189,320	869,125	20,007	2,187	10,261	28,736	0	0	0	0	0	0	0	0	0	0	1,009,088
Florida	7,287	232	16,189	3,906	1,000	0	0	0	0	0	0	0	0	0	0	0	0	27,614
Total	489,597	684,471	419,897	408,483	605,627	564,989	261,736	46,818	144,897	117,708	113,570	87,447	88,890	76,812	69,565	688	0	2,009,088
East North Central																		
Ohio	480,808	80,821	89,397	80,318	31,908	126,177	22,094	999	18,149	1,979	1,979	1,979	1,979	1,979	1,979	1,979	1,979	644,344
Indiana	231,007	237,115	109,175	109,175	89,444	4,780	30,813	1,979	1,979	1,979	1,979	1,979	1,979	1,979	1,979	1,979	1,979	562,611
Illinois	109,027	111,032	40,507	40,507	22,748	7,760	32,877	38,538	1,334	4,182	4,182	4,182	4,182	4,182	4,182	4,182	4,182	235,448
Michigan	170,813	119,880	81,326	81,326	21,748	7,760	32,877	38,538	1,334	4,182	4,182	4,182	4,182	4,182	4,182	4,182	4,182	335,448
Wisconsin	88,248	89,102	76,082	24,768	41,776	0	0	0	0	0	0	0	0	0	0	0	0	239,126
Total	1,080,882	638,020	302,241	309,637	186,759	141,079	131,442	91,086	49,613	44,390	40,327	26,974	23,189	20,580	17,446	139	0	2,274,648
West North Central																		
Minnesota	89,889	235	12,719	0	0	0	0	0	0	0	0	0	0	0	0	0	0	102,608
Iowa	89,718	235	12,719	0	0	0	0	0	0	0	0	0	0	0	0	0	0	102,608
Missouri	8,983	111,354	31,582	61,313	55,075	1,979	0	0	0	0	0	0	0	0	0	0	0	212,811
North Dakota	368	48	488	0	0	0	0	0	0	0	0	0	0	0	0	0	0	864
South Dakota	368	48	488	0	0	0	0	0	0	0	0	0	0	0	0	0	0	864
Nebraska	368	48	488	0	0	0	0	0	0	0	0	0	0	0	0	0	0	864
Kansas	368	48	488	0	0	0	0	0	0	0	0	0	0	0	0	0	0	864
Total	197,890	189,088	47,700	61,313	117,077	24,490	1,979	0	0	0	0	0	0	0	0	0	0	318,224
South Central																		
Texas	89,889	235	12,719	0	0	0	0	0	0	0	0	0	0	0	0	0	0	102,608
Arkansas	89,718	235	12,719	0	0	0	0	0	0	0	0	0	0	0	0	0	0	102,608
Louisiana	8,983	111,354	31,582	61,313	55,075	1,979	0	0	0	0	0	0	0	0	0	0	0	212,811
Oklahoma	368	48	488	0	0	0	0	0	0	0	0	0	0	0	0	0	0	864
Mississippi	368	48	488	0	0	0	0	0	0	0	0	0	0	0	0	0	0	864
Total	197,890	189,088	47,700	61,313	117,077	24,490	1,979	0	0	0	0	0	0	0	0	0	0	318,224
West South Central																		
Texas	89,889	235	12,719	0	0	0	0	0	0	0	0	0	0	0	0	0	0	102,608
Arkansas	89,718	235	12,719	0	0	0	0	0	0	0	0	0	0	0	0	0	0	102,608
Louisiana	8,983	111,354	31,582	61,313	55,075	1,979	0	0	0	0	0	0	0	0	0	0	0	212,811
Oklahoma	368	48	488	0	0	0	0	0	0	0	0	0	0	0	0	0	0	864
Mississippi	368	48	488	0	0	0	0	0	0	0	0	0	0	0	0	0	0	864
Total	197,890	189,088	47,700	61,313	117,077	24,490	1,979	0	0	0	0	0	0	0	0	0	0	318,224
Mountain																		
Montana	1,979	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,979
Idaho	1,979	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,979
Wyoming	1,979	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,979
Colorado	1,979	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,979
New Mexico	1,979	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,979
Arizona	1,979	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,979
Utah	1,979	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,979
Nevada	1,979	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,979
Total	11,979	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11,979
Pacific																		
Washington	487	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	487
Oregon	487	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	487
California	19,986	17,765	16,475	24,420	9,986	9,986	7,011	6,988	0	0	0	0	0	0	0	0	0	67,841
Total	20,960	17,765	16,475	24,420	19,972	16,972	13,987	13,976	0	0	0	0	0	0	0	0	0	104,793
Territories																		
Puerto Rico	14,444	14,444	14,444	14,444	14,444	14,444	14,444	14,444	14,444	14,444	14,444	14,444	14,444	14,444	14,444	14,444	14,444	144,444

<sup>1</sup> The number of mixtures shown for each State and Region is exclusive of mixtures not specified by grade, although their tonnage are included in the totals.  
<sup>2</sup> The total consumption in Hawaii was 61,664 tons of mixed goods, comprising 137 grades, which were manufactured to consumer's specifications. Data for Alaska not available. In 1952-53, the number of mixtures reported for Alaska was nine, totaling 135 tons.

Table 4—Principal Materials Used as Such<sup>1</sup>

State & Region	Chemical Nitrogen Materials										Phosphate Materials <sup>2</sup>										Potash Materials		Total Primary Nutrient Materials	Secondary and Trace Element Materials <sup>4</sup>
	Ammonia (Anhydrous)	Ammonium Nitrate	Ammonium Limestone Mixtures	Ammonium Sulfate	Calcium Cyanamide	Nitrogen Solutions & Aqueous Ammonia	Sodium Nitrate	Urea	Other <sup>2</sup>	Natural Organics 2/ 3	Superphosphates				Other	Chlorides 50-60 Percent Grades	Other <sup>2</sup>							
											Phosphate Rock <sup>2</sup>	Grades 22 Percent and Under	Grades Over 22 Percent	Other										
Maine	0	1,122	13	54	269	24	138	61	2	1,616	67	3,708	0	132	20	20	7,153	38						
New Hampshire	0	939	0	26	50	0	160	3	6	897	2	3,488	4	86	78	28	4,664	35						
Vermont	0	555	0	10	10	0	64	7	15	368	140	15,067	8	42	238	21	17,771	42						
Massachusetts	0	1,221	0	0	222	0	1,013	68	10	2,407	226	6,568	0	644	466	21	17,216	116						
Rhode Island	0	102	2	59	98	0	1,069	53	9	1,069	53	104	3	77	77	4	1,949	8						
Connecticut	14	692	18	38	234	2	601	68	4	15,178	140	5,152	116	1,067	1,049	1,066	25,416	160						
New England	14	4,611	121	288	680	26	2,066	511	40	27,468	680	32,504	134	2,067	2,068	1,169	74,161	596						
New York	26	12,404	977	348	3,679	758	4,818	1,016	128	16,080	3,029	60,236	1,147	1,886	734	606	86,248	898						
New Jersey	3	3,094	688	144	2,058	473	2,960	184	130	6,680	879	6,443	969	1,094	1,122	119	26,370	272						
Pennsylvania	616	40,813	4,132	6,312	4,881	2,087	14,043	1,847	187	9,926	6,884	31,817	5,826	10,110	1,086	883	81,977	2,691						
Delaware	238	1,716	263	6	577	108	1,545	28	0	640	82	1,040	28	0	46	2	8,076	121						
District of Columbia	0	1	0	7	0	4	16	0	0	926	32	28	0	0	0	0	747	0						
Maryland	639	1,830	602	144	1,820	1,280	3,378	186	15	1,611	1,610	6,263	70	988	281	236	19,358	270						
West Virginia	84	1,116	166	296	8	0	1,458	40	8	480	151	6,254	61	82	128	1	8,288	16						
Middle Atlantic	1,990	27,973	3,094	6,124	11,230	3,489	14,782	1,871	429	36,046	10,537	66,403	8,672	15,361	3,483	1,373	228,049	4,128						
Virginia	614	6,059	26,217	79	1,915	2,398	26,822	84	617	1,111	2,669	9,717	65	1,471	2,007	18,044	98,085	21,190						
North Carolina	7,440	10,719	114,358	172	9,819	7,064	122,172	404	0	2,343	1,467	16,783	170	6,128	10,681	6,615	131,466	27,665						
South Carolina	582	22,324	80,311	871	1,682	1,978	101,937	104	0	835	1,860	20,905	4	6,058	21,681	4	21,184	2,266						
Georgia	9,799	42,124	68,496	1,028	1,947	1,978	96,959	469	19	1,466	2,024	27,654	172	9,018	6,954	14,718	261,962	17,379						
Florida	452	15,951	5,951	2,820	1,830	800	21,793	3,362	15,186	9,282	14,167	6,842	237	8,600	2,911	17,431	119,597	3,365						
South Atlantic	16,997	96,176	297,308	4,670	16,983	15,701	269,010	4,967	15,322	15,237	21,677	83,301	538	23,340	46,638	60,537	1,079,240	75,074						
Ohio	5,080	17,973	241	7,198	974	1,758	1,015	1,514	22	9,448	6,847	14,867	3,887	1,617	3,780	678	71,636	614						
Indiana	10,458	30,878	878	6,188	6,261	3,101	1,388	3,258	7	2,511	19,379	6,436	15,687	1,908	26,080	182	161,596	449						
Illinois	17,315	46,089	1,633	48,068	231	10,580	33	1,021	84	106,377	39,776	6,806	25,828	60,844	189	674,199	982							
Michigan	1,589	12,612	152	6,267	389	868	444	1,678	368	15,235	2,180	9,187	984	1,123	648	708	469	469						
Wisconsin	2,815	7,069	27	239	13	313	9	101	2	6,646	7,806	2,289	864	294	3,980	821	32,569	286						
East North Central	35,377	154,220	2,828	61,407	2,938	19,720	1,699	9,376	673	45,336	406,637	85,569	67,687	15,009	122,417	2,617	986,332	2,649						
Minnesota	18,474	10,600	170	1,967	0	8,467	0	87	3	8,336	3,729	7,386	28,610	10,921	2,243	1	85,962	274						
Iowa	17,882	64,904	178	1,159	188	11,156	30	1,618	7	7,363	16,663	45,426	33,288	31,264	15,141	456	216,799	78						
Missouri	16,978	5,460	3,680	1,657	67	149	80	205	79	106,377	39,776	6,806	25,828	60,844	189	674,199	982							
North Dakota	154	879	0	87	0	141	0	34	0	64	62	40	127	19,883	18,408	0	19,221	135						
South Dakota	1,695	4,900	0	168	0	394	0	289	1	428	80	707	7,028	6,048	13	0	21,743	0						
Nebraska	22,798	68,504	180	544	0	15,815	0	2,089	0	4,084	3,471	4,619	24,682	14,826	213	0	169,853	588						
Kansas	6,525	48,207	5	386	0	326	0	346	0	1,161	2,853	9,162	28,701	42,999	1,767	0	140,078	114						
West North Central	81,482	248,508	3,962	5,981	249	37,735	170	4,727	213	18,249	131,653	66,460	139,361	129,606	25,799	765	886,803	1,342						
Kentucky	796	28,219	349	909	1,647	224	1,607	214	7	447	6,997	33,167	2,797	14,728	10,146	6,229	107,691	162						
Tennessee	4,671	42,721	444	194	1,111	0	16,146	1,082	0	1,085	6,994	32,341	6,559	19,784	22,588	0	129,121	212						
Alabama	2,300	75,259	168	1,080	1,493	1,277	32,338	149	80	830	2,179	25,368	167	46,948	6,898	121	296,196	1,067						
Mississippi	40,811	146,384	3,168	2,024	5,784	0	59,533	182	14	31	2,834	28,664	1,747	75,241	21,426	269	296,321	451						
East South Central	49,679	290,883	48,568	5,616	15,245	1,801	169,774	1,677	41	5,045	15,706	130,430	10,310	166,821	64,264	12,996	881,221	1,922						
Arkansas	18,026	68,578	747	8,479	9,085	24	24,693	2,441	68	189	257	9,748	9,368	2,428	29,781	838	176,502	7						
Oklahoma	28,787	61,279	1,338	7,072	3,524	4,113	30,003	1,744	691	82	1,740	10,599	1,046	7,467	8,971	39	148,461	187						
Louisiana	1,794	9,366	0	682	0	0	678	169	0	1,123	10,416	2,180	9,180	4	47	0	87,708	187						
Texas	27,166	33,025	31	40,761	973	6,218	1,712	2,886	4	6,573	6,144	60,828	25,429	59,589	1,002	60	276,651	448						
West South Central	67,736	149,132	2,017	66,964	15,652	6,589	66,962	5,240	587	6,409	16,697	110,866	44,530	79,880	27,613	734	686,016	654						
Montana	228	3,030	0	1,164	0	0	0	81	0	123	0	178	12,446	5,010	24	0	20,253	426						
Idaho	3,960	20,186	0	31,463	176	1,897	30	170	638	227	0	16,367	14,689	7,061	0	114	96,656	4,365						
Wyoming	206	848	0	299	0	0	0	238	0	781	387	342	9,399	1,049	36	0	8,889	751						
Colorado	2,636	7,003	67	2,332	4	527	0	886	0	1,361	387	10,748	5,103	800	204	0	54,771	878						
New Mexico	4,652	1,832	0	0	0	0	1,800	0	1,109	0	8,666	10,743	4,177	32	0	0	36,264	0						
Arizona	9,941	11,401	0	28,909	940	14,153	793	9,014	8,201	10,397	0	5,328	4,615	27,086	906	282	181,280	10,656						
Utah	1,675	5,634	0	4,617	0	2	0	98	0	1,037	0	3,054	6,289	1,826	73	0	23,967	251						
Nevada	10	6	0	254	0	40	0	8	0	84	0	82	407	242	2	1	1,118	1,377						
Mountain	23,206	49,670	87	70,404	1,119	16,618	854	12,146	6,639	15,711	33	51,394	65,406	60,539	1,004	617	346,621	27,373						
Washington	18,289	33,991	380	22,673	217	21,298	182	890	2,714	2,123	883	6,617	6,857	14,867	2,384	1,897	180,008	13,781						
Oregon	7,059	26,789	48	4,166	849	3,367	33	1,672	3,343	369	54	11,367	2,720	16,688	1,613	9	121,877	17,876						
California	61,618	97,135	0	165,035	6,031	169,599	321	16,448	29,311	5	286,376	2,491	61,474	16,541	29,025	1,268	6,830	987,067	635,683					
Pacific	76,776	117,685	280	237,764	6,808	194,962	456	16,406	35,568	206,429	5,138	81,669	29,796	129,568	5,061	9,970	1,860,546	666,662						
Continental U. S.	261,125	1,116,356	569,033	446,196	66,682	286,011	616,701	60,080	69,186	469,867	805,186	978,216	341,947	596,961	304,767	80,977	6,637,964	777,024						
Hawaii	0	0	0	15,771	0	48,833	138	6,472	98	119	1,466	6,154	379	3,622	13,622	1,718	86,621	2,384						
Puerto Rico	2,664	0	0	60,002	0	1,750	6	33	0	0	352	14	212	0	74	47	66,181	0						
Alaska	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
Territories	2,664	0	0	78,773	0	44,583	141	5,505	95	115	1,466	6,508	388	5,940	13,900	1,760	187,665	2,384						
Total: 1964-65	383,681	1,116,386	388,033	819,980	69,882	340,674	615,942	66,888	89,294	461,100	808,683	965,722	341,940	600,981	319,687	82,427	6,086,547	790,300						
1963-64	380,674	864,738	380,603	826,716	69,213	191,086	669,108	67,512	144,884	420,006	813,676	796,967	347,142	598,141	309,785	81,619	6,016,910	616,613						
1962-63	217,162	846,158	419,948	564,749	69,213	72,917	667,882	67,512	144,884	399,087	1,176,982	1,046,667	347,142	598,141	309,785	74,461	6,016,910	977,667						







## INSECT, PLANT DISEASE NOTES

(Continued from page 5)

keeping them in check by spraying once between each hay cutting.

Lygus bugs, thrips, aphids and fleahoppers are all found in the young cotton. Blister bugs are also building up, and recently ruined 400 acres of tomatoes in the county.

### Missouri Growers Urged To Control Chinch Bugs

COLUMBIA, MO.—Chinchbugs are still causing trouble in several areas. Be on the watch for them and get controls on before extensive damage occurs. We have had several instances of sudan seeded on barley stubble being infested.

Webworms and yellow striped armyworms are damaging some fields of corn. The yellow striped armyworms are particularly common on late plantings. Webworms can be identified by their webbing in which black frass will usually be seen, and by the black spots upon each body segment. These insects can be very destructive to corn when they are present in large numbers. The yellow striped armyworms usually are not present in numbers large enough to justify control.

Generally speaking, cotton is as free of insect pests as can be expected at this time of the season and many of the early fields are squaring beyond expectation since these fields are making very rapid growth. There have been and still are a few large bollworms in some fields but their damage has been confined mainly to the terminals and populations are too low to justify insecticidal application. Beneficial insects are numerous in most fields that have not been treated.

Many fields of corn, especially in the southeast area have from 10 to 60% of the stalks infested with corn earworm working as a "budworm" in the whorls. As bad as this feeding injury may appear, the plants will recover and insecticidal controls are not recommended.

Several fields of soybeans are also infested lightly with corn earworm larvae, and even though they may be ragging the foliage in some instances, injury to the plants is not severe enough to warrant a spray application at this time.—Stirling Kyd and Geo. W. Thomas.

### Cotton Insect Situation Called Serious in Georgia

ATHENS, GA.—Heavy infestations of thrips were reported on June 22 to be general throughout the peanut area of Georgia. Budworm populations in tobacco were heavy in Tift, Colquitt, Thomas and Grady counties, and moderate in Mitchell and Worth counties. Aphids were moderate in Tift, Thomas, Grady and Worth, and light in Colquitt and Mitchell.

Bollworm counts indicate that a very serious boll weevil and bollworm situation exists in the southern half of the state. "I cannot urge . . . too strongly that farmers should know of the severity of this situation and of the need for prompt and effective control measures," commented C. R. Jordan, extension entomologist.

### Codling Moth Activity in Indiana Is Reported

VINCENNES, IND. — The last spring brood adult codling moth taken in emergence cages at Vincennes, where 1,000 larvae overwintered, was on June 17. An overwintering band examined June 18 had 4 pupae under it. No adults have been taken in bait traps in the orchard since June 21. The period when protection for first-brood codling moth is needed has just been completed. First-brood adults (i.e., those that make second-

brood worms) began emerging in an emergence cage in the insectary on June 24. Early second-brood entries can be expected in this area by July 4. Peak activity will likely occur about the middle of July.

Peak flight of first-brood red-banded leaf roller adults occurred June 8 to 9. Flight of this brood has been light since June 17. No second-brood larvae had been observed by June 26, but growers should check their orchards carefully for their presence as they oftentimes start showing up at this time of year.

European red mites are still the predominant species present in apple orchards. Numbers present depend upon the control measures practiced to date and vary extensively from orchard to orchard. In most orchards control has been very good.—D. W. Hamilton.

### Howard L. Cromwell Named Manager of Stauffer Freeport Plant

NEW YORK—Howard L. Cromwell has been appointed plant manager of Stauffer Chemical Co.'s Freeport, Texas operations, according to an announcement issued by Daniel J. Keating, vice president and general manager, agricultural chemicals division, Stauffer Chemical Co.

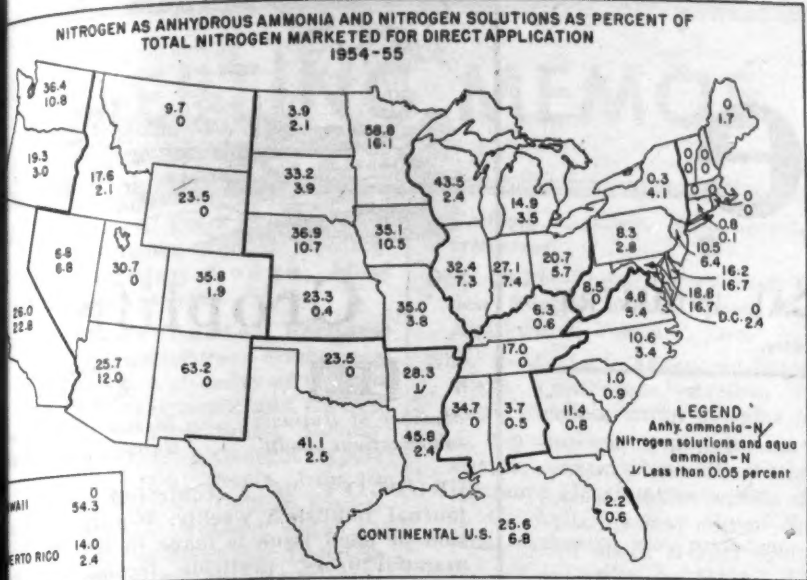
Mr. Cromwell, who is a graduate in chemical engineering from the University of Maryland, joined Stauffer in 1947 and rose to manager of Stauffer's Harvey, La. plant. More recently he has been engaged in process development work at the company's Niagara Falls plant.

Mr. Cromwell succeeds Richard Owen who is now production manager, eastern agricultural chemicals division. This division includes Stauffer plants in Freeport, Houston, Westlaco and Lubbock, Texas; Harvey, La., Tampa, Fla., Bayonne, N.J., North Little Rock, Ark., and Omaha, Neb.



Richard V. Bradley

**RETIREES**—The recent retirement of Richard V. Bradley, Chase Bag Co. sales manager for paper mill products, has been announced by W. N. Brock, vice president and general sales manager. Mr. Bradley became associated with Chase in 1934 in its paper bag division. He served as a salesman, special representative, sales manager, and as eastern regional manager for the sale of Chase multi-wall paper bags. Subsequently he became sales manager in New York for specialty paper products. An alumnus of Columbia University, Mr. Bradley has spent his entire business life in the New York City locale. Mr. and Mrs. Bradley will locate in New Zealand.



In the accompanying map there is shown, by states, the nitrogen as anhydrous ammonia and nitrogen solutions (of which aqua ammonia is a part) as per cent of total nitrogen marketed for direct application in 1954-55. There are wide variations in these percentages of nitrogen supplied by liquid nitrogen products. These range from none in most of the states in New England, to 74.9% in Minnesota, the highest. The average for the U.S. and territories is 25.1% supplied by anhydrous ammonia-nitrogen and 7.3% by all other forms of liquid nitrogen.

### Agency Launches New Marketing Program for Diamond Black Leaf

CLEVELAND — An extensive new marketing program, spearheaded by a national and local advertising campaign, has been launched for Diamond Black Leaf products by Fuller & Smith & Ross Inc.

Diamond Black Leaf Co., an affiliate of Diamond Alkali Co., has adopted a colorful new packaging program to gain point-of-sale identification for Black Leaf insecticides and herbicides.

At the same time, the company introduced a series of new products for lawn and garden care. One of these is "Activated Black Leaf 40," the nicotine sulphate insecticide, which is now produced under an improved formulation, according to the company. Other new products include a lawn insecticide in a self-applier package, a selective lawn weed killer, a rose and flower dust in its own dust container, an aerosol all-purpose insecticide called "Pfft" and another aerosol spray for use against flies, ants, mosquitoes and other household pests.

The new packages, designed to stimulate impulse purchases, feature the Black Leaf emblem on a bright red band. They carry simple, easy-to-read instructions for each product's use. The design imprint on the package is "off balance" typographically to gain at-a-glance identification within the store.

The Black Leaf promotional program, largest in the 46-year history of the brand, includes the use of television both nationally and locally, national consumer and trade magazines, and special newspaper ad campaigns in 28 major markets from coast to coast.

Black Leaf insecticides and herbicides are now being featured by Arlene Francis on NBC's television "Home Show." Local garden shows on television and radio spots are being used in selected markets.

The newspaper campaign includes a total of 252 advertisements. The Black Leaf magazine schedule includes Better Homes & Gardens, Sunset, Flower Grower and Popular Gardening.

The package goods section of Fuller & Smith & Ross, in the agency's Cleveland office, is assisting Diamond Black Leaf in developing its marketing program.

In the above average since 1949-50. In general, the annual rate of increase of  $K_2O$  has about paralleled that of nitrogen from 1944-45 to 1950-51, but there has been a decreasing trend in the annual rate of increase since 1950-51. In both 1954-55 and 1955-56, the consumption of  $K_2O$  was lower than that of nitrogen. The increase in consumption of  $K_2O$  in 1954-55 over 1953-54 was only 61,349 tons; approximately half that of nitrogen.

The trend in the annual rate of increase in the consumption of available  $P_2O_5$  follows more closely the trend in the consumption of primary nutrient fertilizers than that of nitrogen or  $K_2O$  during this period. The average percentage content of  $P_2O_5$  in fertilizers has remained about 10% while that of nitrogen and  $K_2O$  have each increased approximately 5% to nearly 10% during this period.

Mixed fertilizers accounted for 99.79, 79.72, 74.83 and 88.42%, respectively of the nitrogen, available  $P_2O_5$ , total  $P_2O_5$ , and  $K_2O$  consumed in 1954-55. The quantities of these nutrients consumed in mixed fertilizers were respectively 3.27, 1.52, 1.10 and 3.38% greater than in 1953-54.

Fertilizer materials for direct application accounted for 59.01, 20.28, 17 and 11.58%, respectively, of the nitrogen, available  $P_2O_5$ , total  $P_2O_5$ , and  $K_2O$  consumed in 1954-55. The quantities of nitrogen, available  $P_2O_5$ , and  $K_2O$  consumed as fertilizer materials were, respectively, 8.20, 3 and 3.37% greater, while the quantity of total  $P_2O_5$  was 9.63% smaller than in 1953-54. The percentage change in the quantity of primary nutrients of fertilizer mixtures and materials consumed in 1954-55 compared with 1953-54 is shown in Table 6a.

The total primary nutrient content of mixed fertilizers consumed in 1954-55 amounted to 4,282,492 tons, or 86% more than the consumption (175,554 tons) in 1953-54. The total primary nutrient content of fertilizer materials in 1954-55 was 1,734,9 tons, or 6.82% more than 1,720,004 tons consumed in 1953-54.

The consumption of all fertilizers (mixtures and materials) bearing primary nutrients was 214,589 tons (97%) below the 1953-54 level, whereas the total quantity of primary nutrients (nitrogen, available  $P_2O_5$ , and  $K_2O$ ) supplied by these fertilizers was 4,283 tons (3.80%) above this level.

Although primary nutrient materials consumed for direct application comprised only 30% of the quantity of all fertilizers containing these nutrients, they supplied 9% of the nitrogen consumed in 1954-55. Of the various nitrogen-bearing products listed in Tables 4 and 5 anhydrous ammonia, aqua ammonia and all nitrogen solutions have contributed increasing portions of direct application nitrogen over the past 10 years.



# Croplife®

A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL INDUSTRY

The regional circulation of this issue is concentrated in the Western states.

## Plant Nutrient Content of Fertilizer Increases: USDA

Despite a drop in total tonnages of fertilizer materials, the consumption of plant food nutrients for the fertilizer fiscal year 1954-55 was up 3.80% over that of the preceding year, according to the annual USDA consumption report appearing in this issue of Croplife. Compiled by statisticians Walter Scholl, Hilda M. Wallace and Esther I. Fox, the report indicates that the fertilizer industry held its own quite well last year, in the face of considerable odds against it.

Total consumption of fertilizers of all kinds amounted to 22,723,705 tons, which was 49,794 tons less than that used during the previous fiscal year. The actual percentage drop was 0.22%, the report says.

One of the several significant facts contained in the fertilizer consumption story, we think, is the fact that plant food content of fertilizers has risen for the past sixteen consecutive years. The new record set in the 1954-55 season was 6,119,841 tons, which beat the figure of the previous year by 224,283 tons, or 3.80%.

The answer to this apparently paradoxical situation of course lies in the increasing use of higher analysis fertilizers. A 2,000-lb. ton of mixed goods today contains a considerably greater amount of primary plant nutrients than did the same weight of mixed fertilizers a few years back. Thus it is explained how total tonnage can be down, but at the same time, actual plant food content shows an increase.

Fertilizer manufacturers and dealers this year find themselves continuing to battle the economic

factors that tend to reduce sales in many parts of the country. These factors are numerous, including acreage restrictions, a declining farm income, drouth in many parts of the middle west, and the fact that the current election year throws a political aura on every move that is made by government toward helping the farmer out of his difficulties.

The encouraging thing is, that all of these factors, except the election year angle, were true last year . . . and still plant food sales more than held their own. It may well be that when the USDA report is published next year for the 1955-56 season, a surprising tonnage may be tabulated.

Croplife readers studying the tables and other statistical data contained in the report will find many interesting facts to consider in the light of their own distribution problems. For instance, significant gains were registered in consumption of all fertilizers in the New England, Middle Atlantic, Mountain and Pacific regions of the U.S., and also in the territories. The total use in these areas was 473,994 tons greater than in 1953-54, the report says, with more than one-half of this gaining being registered in California.

Decreases were noted however, in the South Atlantic and the four Central regions, with the state of Illinois showing the greatest decrease. The details of these increases and decreases are presented in the various charts and tables accompanying the text of the report.

Each year the trade looks on this annual report with keen interest. This latest one may be regarded with particular interest, since it covers a hectic period of the industry's recent history, when selling was not particularly easy. There seems to be room for a certain feeling of satisfaction in looking back over last season's efforts.

## GRASSHOPPER INVASION . . .

### Destroys Crops, Makes Wife's Flesh Crawl, And Gives Family Dog a Nervous Breakdown

While weekly insect reports sometimes state that "grasshoppers are numerous in the county," the story of utter devastation brought about when these pests come in tremendous numbers is difficult to tell in such objective and restrained language.

To get the real picture across means that someone closely associated with such an invasion should tell about what happens when the 'hoppers arrive in astronomical numbers. Official reports termed as "very severe" a recent infestation that involved some 25,000 acres of land in Douglas and Jefferson counties of Colorado. But a farm wife who experienced the invasion described the spectacle as something that "just makes your flesh crawl."

In a report appearing in the Denver "Post" of June 15, Earl Pomeroy, staff writer, quotes Mrs. Alex Kapinski, a ranch wife who lives near Waterton in a graphic description of a grasshopper infestation from the viewpoint of one of the victims.

Not only does it make one's flesh crawl, as Mrs. Kapinski put it, but "you dream about those grasshoppers every night." She pointed to the yard which was completely littered and eaten away, and remarked that "We once had a beautiful lawn, but just look at it now!"

She continued, "They ate up our rhubarb and cut the rose bushes right down to the ground. They are stripping the apple trees—even the little, green apples. They are taking the foliage off the cottonwoods, willows and box elders.

"Nothing stops them. When they get in the house they eat on the curtains. Shorty, our dog, has had a nervous breakdown. He wouldn't eat for days. They won't leave him alone."

The pooch, indeed, acts as if he had gone dotty. He rolls and rolls to keep the 'hoppers off his fur.

"One of the cats killed a mouse but couldn't work it over because the grasshoppers covered it quickly. Our rabbits went into hiding in the dark of their hutch for days.

"We couldn't coax them out into the light, and then we found that the 'hoppers had got in to them and were chewing on their ears. Our boy had a pet lamb and the poor thing was going crazy. We had to move the lamb up onto high ground west of here.

"At sundown you can't see the pole and our TV antenna. It's just covered black with the bugs. And all through the night you can hear them dropping from the eaves—pop-pop-pop.

"We have to sweep off the screen doors before we can go into the house. I sweep them off the porch all the time, but they come right back.

"They have cleaned us out, but good, this year. It's heartbreaking. The drouth has been bad enough—but this . . ."

Drainage troughs around the patio are filled with the dead insects. But they continue to come on in hordes. Trying to poison them out is like attempting to hold back the sea with a broom.

"The whole ranch looks like fall. When you walk around the house it sounds like you were on cornflakes because of all the dead ones, killed by the spray."



## Croplife

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CROPLIFE is a controlled circulation journal published weekly. Weekly distribution of each issue is made to the fertilizer manufacturers, pesticide formulators and basic chemical manufacturers. In addition, the dealer-distributor-farm adviser segment of the agricultural chemical industry is covered on a regional (crop-area) basis with a mailing schedule which covers consecutively, one each week, four geographical regions (Northeast, South, Midwest and West) of the U.S. with one of four regional dealer issues. To those not eligible for the controlled distribution Croplife subscription rate is \$5 for one year (\$8 a year outside the U.S.). Single copy price, 25¢.

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# MEETING MEMOS

July 4-8—Plant Food Producers of Eastern Canada, Annual Meeting, Mont Tremblant Lodge, Mont Tremblant, Quebec.

July 10-13—Extension Fertilizer Dealer-Manufacturer Congresses. Sponsored by University of Georgia College of Agriculture and Georgia Plant Food Educational Society; Northwest District, Georgia Experiment Station, Griffin, July 10; Northeast District, College Experiment Station, Athens, July 11; Southwest and Southeast Districts, Coastal Plain Experiment Station, Tifton, July 13.

July 12—South Carolina Fertilizer Meeting, Tour of Edisto Experiment Station, Blackville, S.C.

July 19-20—Southwestern Fertilizer Conference and Grade Hearing, Buccaneer Hotel, Galveston, Texas.

July 25-27—Northwest Association of Horticulturists, Entomologists and Plant Pathologists Conference, Northwest Washington Experiment Station, Mount Vernon, Wash.

Aug. 1—Kentucky Fertilizer Conference, Guignol Theatre, University of Kentucky, Lexington, Ky.

Aug. 2-3—Nitrogen Field Day and Equipment Demonstration, Ohio State University, Columbus, Ohio.

Aug. 14-15—Ohio Pesticide Institute, Summer Meeting, Ohio Agricultural Experiment Station, Wooster, Ohio, J. D. Wilson, Wooster, Ohio, Secretary.

Aug. 17-25—Tenth International Congress of Entomology, McGill University and University of Montreal, Montreal, Canada, J. A. Downes, Science Service Bldg., Carling Ave., Ottawa, Ontario, Canada, Congress Secretary.

Aug. 22-24—Beltwide Cotton Mechanization Conference, Atlanta Biltmore, Atlanta, Ga., sponsored by National Cotton Council.

Aug. 24—Grassland-Dairy Field Day in Observance of the 25th Anniversary of Rutgers University Dairy Research Farm, Beemerville, N.J.

Aug. 28-29—Fertilizer Meeting, Nebraska Agricultural College, Lincoln, Neb. Sponsored by the Agricultural Ammonia Institute.

Aug. 30—South Carolina Plant Food Educational Society, Clemson House, Clemson, S.C.

Sept. 5-7—National Agricultural Chemicals Assn., 23rd Annual Meeting, Essex and Sussex, Spring Lake, N.J., L. S. Hitchner, 1145 19th St. N.W., Washington, D.C., Executive Secretary.

Oct. 15—Fifth Annual Chemical Sales Clinic, Hotel Commodore, New York, Sponsored by the Salesmen's Association of the American Chemical Industry.

Oct. 15—Fifth Annual Chemical Sales Clinic, the Salesmen's Association of the American Chemical Industry; Hotel Commodore, New York City; chairman, Preston F. Tinsley, Westvaco Chlor-Alkali Division, Food Machinery and Chemical Corp., 161 East 42nd St., New York 17, N.Y.

Oct. 16-17—National Nitrogen Solutions Assn., Annual Meeting and Trade Show, City Auditorium, Sioux City, Iowa; John White, Auburn, Neb., secretary.

Oct. 16-18—Fertilizer Industry Round Table, Shoreham Hotel, Washington, D.C. Vincent Sauchelli, Chief Agronomist, Davison Chemical Co., Div. W. R. Grace Co., Baltimore 3, Md., chairman.

Oct. 18-19—Association of American Fertilizer Control Officials, Shoreham Hotel, Washington, D.C., B. D. Channing, Clemson Agricultural

College, Clemson, S.C., secretary-treasurer.

Oct. 23-24—Pacific Northwest Garden Supply Trade Show, Shrine Auditorium, Portland, Ore.

Nov. 2—Joint Agronomy-Industry Work Conference, Atlanta Biltmore Hotel, Atlanta, Ga.

Nov. 7-9—Agricultural Ammonia Institute, Annual Convention, Atlanta Biltmore Hotel, Atlanta, Ga., Jack F. Oriswell, Claridge Hotel, Memphis, executive vice president.

Nov. 7-9—Pacific Northwest Plant Food Assn., Annual Convention, Harrison Hot Springs Hotel, Harrison Hot Springs, British Columbia, Leon S. Jackson, Lewis Bldg., Portland, Ore., secretary.

Nov. 11-13—California Fertilizer Assn., 33rd annual convention, Del Coronado Hotel, Coronado, Cal.; Sidney H. Bierly, executive secretary, 475 Huntington Drive, San Marino 9, Cal.

Nov. 19-20—Eastern Branch, Entomological Society of America, Hotel Haddon Hall, Atlantic City, N.J., B. F. Driggers, Rutgers University, New Brunswick, N.J., secretary.

Nov. 28—Oklahoma Fertilizer Dealers Conference, Sponsored by the Oklahoma Plant Food Educational Society, Oklahoma A&M College, Stillwater.

Nov. 29—Oklahoma Soils and Crops Conference, Oklahoma A&M College, Stillwater.

Dec. 27-31—Entomological Society of America, Annual Meeting, Hotel New Yorker, New York City.

## American Potash Names Scholarship Winner

LOS ANGELES—American Potash & Chemical Corp. has announced the winner of its \$4,000 William J. Murphy Memorial Scholarship as John Charles Roberts III, of Boulder City, Nev.

The college scholarship was set up by the company in memory of William J. Murphy, AP&CC vice president in charge of sales, who died last December.

Presentation of the award was made by Robert B. Coons, AP&CC vice president, administration, during recent graduation exercises at Boulder City High School.

Young Roberts is the stepson of Thomas L. War, manager, administrative services, at the company's Henderson, Nev., electrochemicals plant. Qualification for the four-year scholarship was open to children of American Potash & Chemical Corp. employees at its various facilities.

## John L. Gillis of Monsanto Elected MCA Chairman

WHITE SULPHUR SPRINGS, W.VA.—John L. Gillis, vice president, Monsanto Chemical Co., St. Louis, Mo., was elected chairman of the board of the Manufacturing Chemists' Association, Inc., at the association's 84th annual meeting here. He succeeds John R. Hoover, president of B. F. Goodrich Chemical Co.

General John E. Hull, USA (ret.) Washington, D.C., full-time president and a director of the association, was re-elected.

Other officers elected were as follows: Kenneth C. Towe, president, American Cyanamid Co., New York, chairman of the executive committee; and Leland I. Doan, president, The Dow Chemical Co., Midland, Mich., and R. C. McCurdy, president, Shell Chemical Corp., vice presidents. M. F. Crass, Jr., full-time secretary-treasurer, was re-elected.



D. E. Prim

**TRANSFERRED**—Bemis Bro. Bag Co., has announced the transfer of D. E. Prim to its Detroit district sales office. Mr. Prim will service Bemis' accounts in the eastern Michigan and northwestern Ohio areas, under the direction of R. C. Thomas, district sales supervisor. Mr. Prim joined Bemis in 1948. For the past five years he has been a multiwall bag factory representative for Bemis' Peoria plant.

## Featured Speaker

CARLSBAD, N.M.—R. W. Ludwick of New Mexico's Feed and Fertilizer Control Office will be a featured speaker at the midsummer meeting of the New Mexico Grain & Feed Dealers Assn. July 15-16 here at the Lake View Courts. He will speak on fertilizer marketing practices and regulatory service legislation.

# INDEX OF ADVERTISERS

Abrasion & Corrosion Engineering Co.....	Kelly Ryan Equipment Co. ....
Allied Chemical & Dye Corp.,	Kennedy Minerals Company, Inc. ....
Nitrogen Division .....	Kent, Percy, Bag Co. ....
American Chemical Paint Co. ....	Ketona Chemical Corp. ....
American Potash & Chemical Corp. ....	Krause Plow Corp. ....
American World Chemical Co. ....	Kraft Bag Corp. ....
Anco Manufacturing & Supply Co. ....	
Armour Fertilizer Works .....	Lion Oil Co., Div. Monsanto Chem. Co. ..
Ashcraft-Wilkinson Co. ....	
Atkins, Kroll & Co. ....	The Mackwin Co. ....
	Meredith Publishing Co. ....
Barnard & Leas Mfg. Co. ....	Minerals & Chemical Corp. of America ..
Baughman Manufacturing Co., Inc. ....	Mississippi River Chemical Co. ....
Beard, J. B., Co. ....	Monsanto Chemical Co. ....
Bemis Bro. Bag Co. ....	
Bennett Industries, Inc. ....	National Potash Co. ....
Blue, John, Co. ....	Naugatuck Chemical Div., U. S.
Bonneville, Ltd. ....	Rubber Co. ....
Bradley & Baker .....	New York Hanseatic Corp. ....
Brea Chemicals .....	Nitrogen Div., Allied Chemical &
Broyhill Company .....	Dye Corporation .....
Burrows Equipment Co. ....	
Butler Manufacturing Co. ....	Olin Mathieson Chemical Corp. ....
	Ozark-Mahoning Co. ....
California Spray-Chemical Corp. ....	
Chase Bag Co. ....	Pacific Coast Borax Co. ....
Circle Seal Products .....	Pennsylvania Salt Mfg. Co. of Washington
Clover Chemical Co. ....	Pfizer, Chas., & Co., Inc. ....
College Science Publ. ....	Phillips Chemical Co. ....
Commercial Solvents Corp. ....	Pollard Mfg. Co. ....
	Potash Company of America .....
Davison Chemical Co. ....	Poulsen Company .....
Deere & Co., Grand River Chem. Div....	Powell, John, & Co., Inc. ....
Dempster Mfg. Co. ....	Private Brands, Inc. ....
Diamond Black Leaf Co. ....	
Doherty Weed Control .....	Rieke Metal Products Corp. ....
Douglas Chemical Co. ....	Riverdale Chemical Co. ....
Dow Chemical Company .....	
	Shell Chemical Corp. ....
E. I. du Pont de Nemours & Co., Inc.....	Simonsen Mfg. Co. ....
Eastern States Chem. Co. ....	Sinclair Chemicals, Inc. ....
	Smith-Rowland Co., Inc. ....
Fairfield Chemical Division, Food	Sohio Chemical Co. ....
Machinery and Chemical Corp. ....	Spencer Chemical Co. ....
Fischbein, Dave, Co. ....	Stauffer Chemical Co. ....
Fertilizer Engineering & Equipment Co....	Stewart-Warner Corp. ....
Flint Steel Corporation .....	Successful Farming .....
Floridin Company .....	
Frontier Chemical Co. ....	Tennessee Corp. ....
	Thomas Alabama Kaolin Co., The .....
Gandrud, E. S., Co. ....	Tryco Mfg. Co. ....
Grace Chemical Co. ....	
Grand River Chemical Div., Deere & Co....	Union Bag and Paper Corp. ....
	U. S. Phosphoric Products Division .....
Hahn, Inc. ....	U. S. Potash Co. ....
Henderson Mfg. Co. ....	U. S. Rubber Co., Naugatuck Chem. Div...
Hercules Powder Co. ....	U. S. Steel Corp. ....
Hough, Frank H., Co. ....	
Hypro Engineering, Inc. ....	Velsicol Chemical Corp. ....
	Virginia-Carolina Chemical Corp. ....
International Minerals & Chemical Corp...	Vulcan Containers, Inc. ....
Johns-Manville Corp. ....	Vulcan Steel Container Co. ....
	Woodbury Chemical Co. ....

## Classified Ads

Classified advertisements accepted until Tuesday each week for the issue of the following Monday.

Rates: 15¢ per word; minimum charge \$2.25. Situations wanted, 10¢ a word; \$1.50 minimum. Count six words of signature, whether for direct reply or keyed care this office. If advertisement is keyed, care of this office, 20¢ per insertion additional charged for forwarding replies. Classified advertising rate not available for commercial advertising. Advertisements of new machinery, products and services accepted for insertion at minimum rate of \$9 per column inch. All Want Ads cash with order.

## HELP WANTED

**MANAGER FOR LARGE FERTILIZER** plant—North Midwest Area—Granulation experience preferred. Give age, education, experience, first letter. Address Ad No. 1827, Croplife, P. O. Box 67, Minneapolis 1, Minn.

## BUSINESS OPPORTUNITIES

**WE ARE INTERESTED IN PURCHASING** or merging with a small fertilizer plant in Northern Central Florida. Would retain personnel. Address Ad No. 1834, Croplife, P. O. Box 67, Minneapolis 1, Minn.

## E. E. Bredeson Named Swift Plant Food Manager at Portland

PORTLAND, ORE.—E. E. Bredeson has been appointed manager of the plant food division of Swift & Co. at Portland, succeeding Robert W. Finch who has been manager here the past three years. Mr. Bredeson has been transferred from the Cleveland, Ohio branch of the company.

Mr. Finch has announced his future residence as Fullerton, Cal. He has been active as a member of the Pacific Northwest Plant Food Assn., having served as its treasurer the current year.



# A NEW SERVICE for Advertisers and Agencies...

**CROPLIFE** does more than offer the only *weekly* advertising medium to advertisers and advertising agencies interested in reaching the agricultural chemical field. The complete services of Croplife's Home Office in Minneapolis and its full-time branch offices in New York, Chicago and Kansas City are available for the servicing of advertisers and agencies.

Requests for market information, statistical analyses, industry news tie-ins and other service will be handled by experienced full-time staff members of the company.

Working under the direction of Croplife's seasoned and experienced editors in the Minneapolis Home Office is the Advertiser Service Department, headed by a trained statistician and market research man who directs the work of a library and research staff of five persons.

Croplife's advertising sales staff includes full-time staff members in each branch office, with several years of experience in businesspaper advertising, whose first objective is to be of service to advertisers and agencies interested in the field served by Croplife. These repre-

sentatives know agriculture thoroughly and their experience in industries and organizations serving the agricultural field qualifies them highly for their advertising sales and service assignments. Included in this wealth of experience are previous assignments with agricultural experiment stations, the United States Department of Agriculture and daily and weekly newspaper work in agricultural communities.

In the nation's capital, Croplife has its own Washington correspondent, a veteran capital newsmen who interprets the Washington scene in terms of short and long range impact on the industry. In looking behind the government news releases he is able to report valuable information on trends and significant behind-the-scenes activities.

Croplife's foreign manager is alert to overseas developments of interest to the agricultural chemical industry and handles requests from advertisers and agencies for information and service on the foreign market.

Advertisers and advertising agencies interested in the agricultural chemical industry are invited to make use of this advertiser service program.

**WRITE—WIRE—PHONE** our nearest office for the complete story of how Croplife and its complete staff and facilities can be of service to you in planning and producing your advertising to the agricultural chemical industry.



## Croplife ...for richer<sup>sales</sup> fields

New York, 551 Fifth Ave.  
Murray Hill 2-2185

Minneapolis, 2501 Wayzata Blvd.  
FEderal 2-0575

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Harrison 7-67  
Kansas City, 612 Board of Trade Bldg.  
VICTor 2-13